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# UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 C.F.R. § 1.53(b))

Attorney Docket No. HEAL0001

First Inventor or Application Identifier Moraq et al.

Title A Message and Program System Supporting Communication

Express Mail Label No. EL090780656US

## APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: Assistant Commissioner for Patents  
Box Patent Application  
Washington, DC 20231

1. ☒ \* Fee Transmittal Form (e.g., PTO/SB/17)  
(Submit an original and a duplicate for fee processing)
2. ☒ Specification [Total Pages (preferred arrangement set forth below)
  - Descriptive title of the invention
  - Cross References to Related Applications
  - Statement Regarding Fed sponsored R & D
  - Reference to Microfiche Appendix
  - Background of the invention
  - Brief Summary of the invention
  - Brief Description of the Drawings (if filed)
  - Detailed Description
  - Claim(s)
  - Abstract of the Disclosure
3. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets - 4. Oath or Declaration [Total Pages - a. ☒ Newly executed (original or copy)
- b. ☐ Copy from a prior application (37 C.F.R. § 1.63(d))  
(for continuation/divisional with Box 16 completed)
  - i. ☐ DELETION OF INVENTOR(S)  
Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. §§ 1.63(d)(2) and 1.33(b).

5. ☐ Microfiche Computer Program (Appendix)
6. Nucleotide and/or Amino Acid Sequence Submission  
(if applicable, all necessary)
  - a. ☐ Computer Readable Copy
  - b. ☐ Paper Copy (identical to computer copy)
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## ACCOMPANYING APPLICATION PARTS

7. ☒ Assignment Papers (cover sheet & document(s))
8. ☐ 37 C.F.R. § 3.73(b) Statement (when there is an assignee) ☒ Power of Attorney
9. ☐ English Translation Document (if applicable)
10. ☒ Information Disclosure Statement (IDS)/PTO-1449 ☒ Copies of IDS Citations
11. ☐ Preliminary Amendment
12. ☒ Return Receipt Postcard (MPEP 503)  
(Should be specifically itemized)
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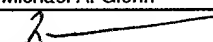
Prior application information: Examiner \_\_\_\_\_ Group / Art Unit: \_\_\_\_\_

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Applicant or Patentee: Assaf Morag, Gary Gannot, and Ofir Baharav

Serial No.: \_\_\_\_\_ Filing Date: Herewith

Patent No.: \_\_\_\_\_ Issued: \_\_\_\_\_

For: A MESSAGE AND PROGRAM SYSTEM SUPPORTING COMMUNICATION

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS  
37 CFR 1.9(f) and 1.27(b) - SMALL BUSINESS CONCERN

I hereby declare that I am:

( ) the owner of the small business concern identified below:

( X ) an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF CONCERN Healinx

ADDRESS OF CONCERN 950 Marina Village Parkway, Suite 100, Alameda, CA 94501

I hereby declare that the above-identified small business concern qualifies as a small business concern as defined in 13 CFR 121.3 - 18 and reproduced in 37 CFR 1.9(c) for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time, or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention entitled: A MESSAGE AND PROGRAM SYSTEM SUPPORTING COMMUNICATION by Inventor Assaf Morag, Gary Gannot, and Ofir Baharav described in:

(X) the application filed herewith

( ) application serial no. \_\_\_\_\_, filed \_\_\_\_\_

( ) patent no. \_\_\_\_\_, issued \_\_\_\_\_

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Attorney Docket No. HEAL0001

FULL NAME \_\_\_\_\_

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I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate (37 CFR 1.28(b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING Ofir Baharav

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Alameda, CA 94501

SIGNATURE  DATE 5-09-94

## **A MESSAGE AND PROGRAM SYSTEM SUPPORTING COMMUNICATION**

### **TECHNICAL FIELD**

This invention relates to a messaging communication method and program system supporting communication between patients and physicians, physician extenders including nurses, and the ordering of prescriptions, alternatively supporting communication between clients, service providers, service extenders including service assistants and the ordering of services.

### **DESCRIPTION OF THE PRIOR ART**

Figure 1 depicts prior art human-computer interfaces capable of supporting messaging upon communications networks. One exemplary prior art computer system includes a display screen 2 in an enclosure 4, audio speakers 6 and 8, a second enclosure 10 housing a removable media drive 12. Keyboard 14 is interfaced via physical transport mechanism 16 to the computer. Selector device 18 is interfaced via physical transport mechanism 20 to the computer. Audio microphone 22 is interfaced via physical transport mechanism 24 to the computer. The computer system interfaces via physical transport mechanism 30 to network 32.

Certain exemplary prior art handheld computer interfaces are often single enclosures 40 incorporating a miniature display screen 42 with buttons 44 and a pointing device 46. The computer enclosure 40 is often held in one hand, while the pointing device 46 is held with the other hand. Wireless communications port 48 can both transmit 50 signals and receive 38 signals transmitted by wireless transceiver interface 36, which interfaces to network 32 via physical transport



5 mechanism **34**. Other exemplary uses of such devices include mounting enclosure **40** on a wrist- or arm-band, thus freeing one hand.

Other exemplary prior art computer systems include but are not limited to devices incorporating one or more audio speakers such as **6** or **8**, at least one audio microphone **22**, which may or may not possess a display screen **2**, but often  
10 possess a miniature display screen **42** and often several buttons **44** or keyboard **14**. Cellular telephones, both hand held and vehicle-mounted, possessing all these features are readily available connecting to either local wireless networks or larger national and international networks, in some cases through orbiting satellite transceivers **36**, which use separate carriers **34** to further interface to  
15 ground base stations which provide high bandwidth gateways to large Wide Area Networks (WANs), including the Internet and the World Wide Web.

These exemplary devices are often capable of receiving messages, such as e-mail and paging messages. Many of these exemplary devices are capable of audio exchanges in a fashion similar to a telephone with a telephone messaging  
20 center. Many of these exemplary devices may further support the loading and adding of programs to provide upgraded services and new service capabilities. Many of these systems possess the ability to retain such loaded or added programs after the power to the module has been turned off.

Such devices have been used to further provide a communication avenue  
25 between patients and physicians, through email and paging-style messages. Paging a doctor with a short message such as "Water has broken" may give an adequate portrayal of some situations such as the imminence of labor in childbirth. However, such a messaging system could not adequately portray the circumstances regarding a potential breach birth.

30 Traditional telephones have often been used to permit a physician and patient to communicate. However, there are problems with such devices. Telephones without answering or message centers require that both patient and physician be

5 available at essentially the same time, which is often difficult to arrange. Telephones, even with messaging centers, still have problems. Often the stored messages are short in duration. Even when the messages may be quite long, patients do not tend to give concise, clear and complete verbal medical descriptions of exactly the relevant conditions needed to describe their medical  
10 condition. This leads to a situation of question and answers, often with the patient and/or doctor having to wait significant amounts of time between each "bounce" before there is enough information in front of the physician to respond with a consultation. Further, physicians must listen through their patients messages, often wasting time trying to sort through the words to determine the observed  
15 medical conditions. This is an inefficient use of the physicians' time.

Email exchanges between patients and physicians can provide greater amounts of information. However, there is a tendency to waste both patient and doctor time for several reasons. First, patients do not tend to write concise, clear and complete medical descriptions of exactly the relevant conditions needed to  
20 describe their medical condition. This is understandable, most people are not trained enough at medicine to know what a physician will need to know. This again leads to question and answer situations, often with the patient and doctor having to wait significant amounts of time between each "bounce" before there is enough information in front of the physician to respond with a consultation.  
25 Further, physicians must read what their patients have written, often wasting time trying to sort through the words to determine the observed medical conditions. This is an inefficient use of the physicians' time.

The devices mentioned above have also been used to further provide a communication avenue between clients and service providers for various kinds of  
30 service support, through email and paging-style messages. Brief messages such as "flat tire" may convey adequate information in some circumstances but would be fundamentally inadequate in situations based around mission critical technologies such as aircraft.

- 5 Consider a commonly occurring scenario in the airline industry. A technician in an isolated location finds an intermittent failure in testing a system possessing electromechanical, fluidic and airfoil control components, by way of example. The determination of the proper course of action involves decisions regarding each of these areas of the aircraft's technologists, combined with an
- 10 understanding of the reliability history of the system involved and the relevant government and airline regulations. Client such as the local airport technician need access to high level, integrated service provider responses.

Traditional telephones have often been used to permit a service provider and client to communicate. However, there are problems with such devices.

- 15 Telephones without answering or message centers require that both client and service provider be available at essentially the same time, which is often difficult to arrange or involve the clients waiting for extended periods of time "on hold". Telephones, even with messaging centers, still have problems. Often the stored messages are short in duration. Even when the messages may be quite long,
- 20 clients do not tend to give concise, clear and complete verbal service descriptions of exactly the relevant conditions needed to describe their service condition. This leads to a situation of question and answers, often with the client and/or doctor having to wait significant amounts of time between each "bounce" before there is enough information in front of the service provider to respond with
- 25 a consultation. Also, the expertise of the service providers may vary greatly, making the omission of specific questions possible, limiting the utility of the direct contact. Further, service providers must listen through their clients messages, often wasting time trying to sort through the words to determine the observed service conditions. This is an inefficient use of the service providers' time.

- 30 Email exchanges between clients and service providers can provide greater amounts of information. However, there is a tendency to waste both client and doctor time for several reasons. First, clients do not tend to write concise, clear and complete service descriptions of exactly the relevant conditions needed to

5 describe their service condition. This is understandable, most people are not  
trained enough in the service area's technology to know what a service provider  
will need to know. This again leads to question and answer situations, often with  
the client and doctor having to wait significant amounts of time between each  
"bounce" before there is enough information in front of the service provider to  
10 respond with a consultation. Further, service providers must read what their  
clients have written, often wasting time trying to sort through the words to  
determine the observed service conditions. This is an inefficient use of the  
service providers' time.

Figure 2 depicts a generic prior art block of a messaging communications system  
15 supporting the online ordering of prescriptions by physicians interacting with  
pharmacies. Email and other messaging systems have been used to provide a  
limited form of automation for the placing of prescription orders with various  
pharmacies possessing online message capabilities. Physician 100 interacts 102  
with a physician-operated computer 104, which may be a desktop, notebook, or  
20 handheld computer, possibly embedded in a cellular telephone. The physician  
operated computer 104 sends a specialized message, a prescription ordering  
message, using physical transport mechanism 106 to a network 108, which is  
controlled and accessed 110 by network server 112. Network server 112  
accesses 114 medical databases and patient database 116. Network server 112  
25 then sends a specialized pharmaceutical order message to a pharmacy  
computer 120 which is linked 118 to the same network 110.

There is a central problem with such systems. The patient is not part of the  
interaction. The patient cannot choose whether to order the prescription. The  
patient cannot choose which pharmacy or where the pharmacy sends the  
30 prescription, or whether a traditional brick and mortar pharmacy is preferred.  
The patient cannot choose between different brands.

## **Summary of the Invention**

One aspect of this invention embodies a method of messaging upon a network involving at least one physician, at least one patient and a workflow engine. Each physician operates a computer, which from time to time is capable of receiving and sending messages upon the network at a corresponding address  
10 on the network. Each patient operates a computer, which from time to time, is capable of receiving and sending messages upon the network at a corresponding address on the network. The workflow engine accesses the network for receiving and sending messages upon the network using at least one workflow engine address on the network. The method comprises using a first medical  
15 message wizard by the patient on the patient operated computer, a medical profiler process performed by the workflow engine and a second medical message wizard by the first physician on the physician operated computer at the first corresponding physician address.

Using the first medical message wizard by the patient is further comprised of  
20 generating an educated query message and sending the educated query message to the medical profiler address. Performing the medical profiler process by the workflow engine is further comprised of receiving the educated query message at the medical profiler address; processing the received educated query message; generating a patient message log entry in a medical profile of  
25 the patient; generating a patient medical query message; sending the patient medical query message to a first physician with the corresponding physician address. Using the second medical message wizard by the first physician is further comprised of receiving the patient medical query message; processing the patient medical query message; generating a physician-viewable patient  
30 medical query message; and displaying a physician-viewable patient medical query message.

5 This embodiment of the invention has several advantageous characteristics: It minimizes the need for extensive typing for the patient. It decreases the need for message "ping-pong" between patient and physician due to insufficient information in the patient's messages to the physician. It allows the physician to read in an optimized format, which minimizes the physician's reading time. In  
10 many cases, the physician will not need to poll a chart pool, because the medical profile will cover the required information. There is no need for phone tag with patients.

15 A further aspect of this invention involves further embodiments of the first messaging wizard, medical profiler process and second messaging wizard. The second medical message wizard further comprises responding to the physician-viewable patient medical query message; generating a patient response message; sending the patient response message; and copying the patient response message with an appended physician billing data to the workflow  
20 engine. Responding to the physician-viewable patient medical query message creates a first-physician response. Generating a patient response message from the physician-viewable patient medical query message and the first-physician response. Sending the patient response message to the patient at the corresponding patient address.

25 The medical profiler process further comprises: receiving the copied patient response message with the appended physician billing data; processing the received, copied patient response message with the appended physician billing data; generating a patient response log entry in the medical profile of the patient. Processing the received, copied patient response message with the appended  
30 physician billing data creates a processed, received, copied patient response message with the appended physician billing data. The generating a patient response log entry in the medical profile of the patient is from the processed,

5 received, copied patient response message with the appended physician billing data.

The first message wizard further comprises: receiving the patient response message; processing the received patient response message to create a processed, received patient response message; and displaying the processed,  
10 received patient response message.

This aspect of the invention is advantageous for several reasons. It supports the physician responding to the optimized educated query of the patient. It supports the automated logging of physician responses with billing information at the workflow engine. It supports the patient receiving the physician's response.

15 Further embodiments of this invention advantageously support the use of authentication keys insuring secure communications between patient and workflow engine, between patient and physician and between physician and workflow engine.

Further embodiments of this invention advantageously support physician  
20 extenders, including nurses, physician assistants and administrators.

Further embodiments of this invention advantageously support prescriptions involving, not only the physician, workflow engine and pharmacy, but also the patient. This is advantageous for several reasons. The patient takes part in the prescription-ordering interaction. The patient can choose whether to order the  
25 prescription. The patient can choose which pharmacy to purchase the prescription from. The patient can choose where the pharmacy sends the prescription. The patient can choose whether a traditional brick and mortar pharmacy is preferred. The patient can choose between different brands.

Another aspect of this invention embodies a computer program residing on a  
30 computer readable medium accessible by the patient operated computer capable

5 of receiving patient response messages and sending messages to a workflow engine. It includes code for receiving the patient response message with an embedded prescription; code for displaying the received patient response message; code for responding to the patient response message; code for sending the patient prescription message to the workflow engine. The code for  
10 responding to the patient response message further includes code for generating a patient prescription message from the embedded prescription.

This aspect of the invention is advantageous for several reasons. The patient takes part in the prescription-ordering interaction. The patient can choose whether to order the prescription. The patient can choose which pharmacy to  
15 purchase the prescription from. The patient can choose where the pharmacy sends the prescription. The patient can choose whether a traditional brick and mortar pharmacy is preferred. The patient can choose between different brands.

Another aspect of this invention embodies a method of messaging upon a network involving at least one service provider, at least one client and a service-  
20 flow engine. Each service provider operates a computer, which from time to time is capable of receiving and sending messages upon the network at a corresponding address on the network. Each client operates a computer, which from time to time, is capable of receiving and sending messages upon the network at a corresponding address on the network. The service-flow engine  
25 accesses the network for receiving and sending messages upon the network using at least one service-flow engine address on the network. The method comprises using a first service message interface by the client on the client operated computer, a service profiler process performed by the service-flow engine and a second service message interface by the first service provider on  
30 the service provider operated computer at the first corresponding service provider address.



5 Using the first service message interface by the client is further comprised of generating an educated query message and sending the educated query message to the service profiler address. Performing the service profiler process by the service-flow engine is further comprised of receiving the educated query message at the service profiler address; processing the received educated query message; generating a client message log entry in a service profile of the client; 10 generating a client service query message; sending the client service query message to a first service provider with the corresponding service provider address. Using the second service message interface by the first service provider is further comprised of receiving the client service query message; processing the client service query message; generating a service provider-viewable client service query message; and displaying a service provider-viewable client service query message. 15

This embodiment of the invention has several advantageous characteristics: It minimizes the need for extensive typing for the client. It decreases the need for message "ping-pong" between client and service provider due to insufficient information in the client's messages to the service provider. It allows the service provider to read in an optimized format, which minimizes the service provider's reading time. In many cases, the service provider will not need to poll a chart pool, because the service profile will cover the required information. There is no 20 need for phone tag with clients. 25

A further aspect of this invention involves further embodiments of the first message interface, service profiler process and second message interface. The second service message interface further comprising responding to the service provider-viewable client service query message; generating a client response message; sending the client response message; and copying the client response message with an appended service provider billing data to the service-flow engine. Responding to the service provider-viewable client service query message creates a first-service provider response. Generating a client response 30

5 message from the service provider-viewable client service query message and the first-service provider response. Sending the client response message to the client at the corresponding client address.

The service profiler process further comprises: receiving the copied client response message with the appended service provider billing data; processing  
10 the received, copied client response message with the appended service provider billing data; generating a client response log entry in the service profile of the client. Processing the received, copied client response message with the appended service provider billing data creates a processed, received, copied client response message with the appended service provider billing data. The  
15 generating a client response log entry in the service profile of the client is from the processed, received, copied client response message with the appended service provider billing data.

The first message interface further comprises: receiving the client response message; processing the received client response message to create a  
20 processed, received client response message; and displaying the processed, received client response message.

This aspect of the invention is advantageous for several reasons. It supports the service provider responding to the optimized educated query of the client. It supports the automated logging of service provider responses with billing  
25 information at the service-flow engine. It supports the client receiving the service provider's response.

Further embodiments of this invention advantageously support the use of authentication keys insuring secure communications between client and service-flow engine, between client and service provider and between service provider  
30 and service-flow engine.

5 Further embodiments of this invention advantageously support service extenders, including service assistants, service provider assistants and administrators.

Further embodiments of this invention advantageously supports service recommendations involving the service provider, service-flow engine and  
10 supplier, but also the client. This is advantageous for several reasons. The client takes part in the service recommendation-ordering interaction. The client can choose whether to order the service recommendation. The client can choose which supplier to purchase the service recommendation from. The client can choose where the supplier sends the service recommendation. The client can  
15 choose whether a traditional brick and mortar supplier is preferred. The client can choose between different brands.

Another aspect of this invention embodies a computer program residing on a computer readable medium accessible by the client operated computer capable of receiving client response messages and sending messages to a service-flow  
20 engine. It includes code for receiving the client response message with an embedded service recommendation; code for displaying the received client response message; code for responding to the client response message; code for sending the client service recommendation message to the service-flow engine. The code for responding to the client response message further includes  
25 code for generating a client service recommendation message from the embedded service recommendation.

This aspect of the invention is advantageous for several reasons. The client takes part in the service recommendation-ordering interaction. The client can choose whether to order the recommended service(s). The client can choose  
30 which supplier to purchase the recommended service(s) from. The client can choose where the supplier delivers the recommended service(s). The client can

- 5 choose whether a traditional brick and mortar supplier is preferred. The client can choose between different brands.

These and other advantages of the present invention will become apparent upon reading the following detailed descriptions and studying the various figures of the drawings.

5                                    **Brief Description of the Drawings**

Figure 1 depicts prior art human-computer interface capable of supporting messaging upon communications networks;

Figure 2 depicts a generic prior art block of a messaging communications system supporting the online ordering of prescriptions by physicians interacting with  
10    pharmacies;

Figure 3A depicts a flow diagram of an embodiment of the invention in accordance with certain embodiments;

Figure 3B depicts a more detailed flow diagram of an embodiment of the invention in accordance with certain embodiments;

15    Figure 4 depicts an interactive flow between a patient using a first messaging wizard, medical profiler performing a medical profiler process and physician using a second messaging wizard in accordance with an embodiment of the invention;

Figure 5 depicts a flowchart of operations supporting the generation and sending  
20    of an educated query by a patient using the first messaging wizard in accordance with embodiments supporting Figure 4;

Figure 6 depicts a flowchart of operations supporting the reception, processing, logging of the educated query message from the patient, and the generation and sending of the patient medical query message to a physician by the medical  
25    profiler process performed by the medical profiler in accordance with embodiments supporting Figure 4;

Figure 7 depicts a flowchart of operations supporting reception, processing and viewing the patient medical query message by the second message wizard for the physician in accordance with embodiments supporting Figure 4;

5 Figure 8 depicts a flowchart of operations supporting reception, generation and sending a patient response message, as well as copying the patient response message with an appended physician billing data to the medical profiler address in accordance with embodiments supporting Figure 4;

Figure 9 depicts a flowchart of operations supporting the reception, processing,  
10 logging the copied patient response message with an appended physician billing data by the medical profiler process performed by the medical profiler in accordance with embodiments supporting Figure 4;

Figure 10 depicts a flowchart of operations supporting reception, processing and display of the patient response message using the first messaging wizard on the  
15 patient operated computer in accordance with embodiments supporting Figure 4;

Figure 11 depicts a flowchart of further details regarding operation 604, generation of an educated query message by the first messaging wizard in accordance with embodiments supporting Figure 5;

Figure 12 depicts a flowchart of further details regarding operation 638,  
20 processing the educated query message using the medical profiler process performed by the medical profiler in accordance with embodiments supporting Figure 6;

Figure 13 depicts a flowchart of further details regarding operation 642, generation of a patient medical query message by the medical profiler process  
25 performed by the medical profiler in accordance with embodiments supporting Figure 6;

Figure 14 depicts a flowchart of further details regarding operation 678, processing the received patient medical query message by the second messaging wizard in accordance with embodiments supporting Figure 7;

5 Figure **15** depicts a flowchart of further details regarding operation **722**, copying the patient response message with appended physician billing data to the medical profiler by the second messaging wizard in accordance with embodiments supporting Figure **8**;

Figure **16** depicts a flowchart of further details regarding operation **748**,  
10 processing the received, copied the patient response message with appended physician billing data using the medical profiler process performed by the medical profiler in accordance with embodiments supporting Figure **9**;

Figure **17** depicts a flowchart of further details regarding operation **708**,  
15 generating patient response message using the second message wizard in accordance with embodiments supporting Figure **8**;

Figure **18** depicts a flowchart of further details regarding operation **778**,  
processing the received patient response message using the first message wizard in accordance with embodiments supporting Figure **10**;

Figure **19** depicts a flowchart of further details regarding operation **712**, sending  
20 the patient response message with appended physician billing data using the medical profiler process performed by the medical profiler in accordance with embodiments supporting Figure **8**;

Figure **20** depicts a flowchart of further details regarding operation **708**,  
25 generating the patient response message using the second message wizard in accordance with embodiments supporting Figure **8**;

Figure **21** depicts a flowchart of operations of the medical profiler process performed by the medical profiler in accordance with alternative embodiments supporting Figure **4**;

Figure **22** depicts a flowchart of further details regarding operation **1048**,  
30 processing the patient response message destined for the patient using the

- 5    medical profiler process performed by the medical profiler in accordance with  
embodiments supporting Figure **21**;

Figure **23** depicts a flowchart of further details regarding operation **642**,  
generating a patient medical query message using the medical profiler process  
performed by the medical profiler in accordance with embodiments;

- 10    Figure **24** depicts a flowchart of operations using the third message wizard on the  
physician extender computer in accordance with embodiments supporting Figure  
**9**;

- 15    Figure **25** depicts a flowchart of further details regarding operation **602**,  
generating the physician-viewable patient medical query message in accordance  
with embodiments supporting Figures **7**;

Figure **26** depicts a flowchart of further details regarding operation **708**,  
generating the patient response message using the second message wizard in  
accordance with embodiments supporting Figure **8**;

- 20    Figure **27** depicts a flowchart of further operations embodying the third message  
wizard in accordance with certain embodiments;

Figure **28** depicts a flowchart of further operations embodied in the message  
profiler process in accordance with certain embodiments;

- 25    Figure **29** depicts a flowchart of further operations embodied in a second  
messaging wizard in accordance with certain embodiments supporting  
prescriptions;

Figure **30** depicts a flowchart of further operations embodied in a medical profiler  
in accordance with certain embodiments supporting prescriptions;



5 Figure **30A** depicts a flowchart of further details regarding operation **1311**, integrating a prescription order in the medical profiler process in accordance with embodiments supporting Figure **30**;

Figure **31** depicts a flowchart of further operations embodied in the first messaging wizard in accordance with certain embodiments supporting  
10 prescriptions;

Figure **32** depicts a flowchart of further details of operation **1352**, ordering the embedded prescription of Figure **31**;

Figure **33** depicts a flowchart of further details of operation **1170** of Figure **25**;

Figure **34** depicts a flowchart of further details of operation **1222** of Figure **27**;

15 Figure **35** depicts a flowchart of further details of operation **1402** of Figure **34**;

Figure **36** depicts a flowchart of further operations embodying the message profiler process in accordance with certain embodiments supporting billing patients;

Figure **37** depicts a flowchart of further operations embodying the message  
20 profiler process in accordance with certain embodiments further supporting billing patients;

Figure **38** depicts a flowchart of further operations embodying a billing process in accordance with certain embodiments;

Figure **39** depicts a flowchart of further details of operation **1518** of Figure **38**;

25 Figure **40** depicts a flowchart of further details of operation **708** of Figure **8** supporting a physician requesting a second opinion in accordance with certain embodiments;

5 Figure **41** depicts a flowchart of operations embodied in the second message wizard supporting a second physician and a second opinion request in accordance with certain embodiments;

Figure **42** depicts a flowchart of operations embodied in a second message wizard supporting maintaining a collection of patient response templates in  
10 accordance with certain embodiments;

Figure **43** depicts a flowchart of further details of operation **704** of Figure **8** supporting use of a patient response template to create a first-physician response in accordance with certain embodiments;

Figure **44** depicts a flowchart of operations embodied in a first messaging wizard  
15 to support maintaining a collection of patient problem templates in accordance with certain embodiments;

Figure **45** depicts a flowchart of further details of operation **604** of Figure **5** supporting use of a patient problem template to create an educated medical query using a first medical wizard in accordance with certain embodiments;

20 Figure **46** depicts a flowchart of operations embodied in a medical profiler process to generate and send patient problem templates to patients in accordance with certain embodiments;

Figure **47** depicts a flow diagram of a medical profiler process in accordance with certain embodiments;

25 Figure **48** depicts a flow diagram of a computer program capable of receiving a message from a physician containing a prescription and responding to the message containing the prescription by generating and sending a prescription order message in accordance with certain embodiments in accordance with an aspect of the invention;

5 Figure **3B** depicts a flow diagram of an embodiment of the invention in accordance with certain embodiments. Patient **200** is the primary initiator of this invention. Arrow **202** depicts the interactions of patient **200** to create the educated query message **204**. The educated query message **204** is an optimized medical query directed by the patient to address concerns and conditions  
10 involving the patient. Arrow **206** depicts the sending of educated query message **204** to the medical profile **208** which is managed by the medical profiler process. The workflow engine performs the various medical profiler process operations. More will be said about the workflow engine shortly. Arrow **210** depicts interactive communication between the workflow engine **208** and the physicians  
15 **212** primarily regarding the medical profiler. Physicians **212** are the central destination of patient generated educated medical query messages as sent by **210** from the medical profiler process to the physician **212**. Arrow **214** depicts the response of physician **212** to the educated query message, generating a consultative response **216**. Consultation **216** provides the basis of the patient  
20 response message **226**. Arrow **218** depicts the inclusion of the physician consultative response **216** with educational material **220**. Educational material **220** is included in certain, but not all cases, to meet mandated regulations as well as provide the physicians a mechanism to distribute standard material regarding various conditions and treatments. Arrow **222** depicts the workflow engine  
25 activities required to incorporate the consultative response and included materials **220** with billing information (charging) **224**. Charging **224** performs tasks of notifying a patient medical profile of the consultative transaction, what was the query, response, educational materials included and the medical service expenses. Arrow **226** depicts the actual patent response message derived from  
30 **224** query, physician response, educational materials included and the medical service expenses sent to patient **200**.

Arrow **230** depicts the message information flow from the workflow engine to physician extender **232**. Physician extenders **232** perform a number of medical

5 Figure **49** depicts a flowchart of further details of the code of **1854** of Figure **48** supporting receiving a patient response message with an embedded prescription in accordance with certain embodiments; and

Figure **50** depicts a flowchart of further details of the code of **1862** of Figure **48** supporting responding to the patient response message in accordance with  
10 certain embodiments.

Figure **50A** depicts a flowchart of further details of **1311** of Figure **30** supporting integrating a prescription order in accordance with certain embodiments;

Figure **50B** depicts a flowchart of further details of **1324** of Figure **30A** supporting generating a pharmacy prescription order in accordance with certain  
15 embodiments;

Figure **50C** depicts a flowchart of further details of **1326** of Figure **30A** supporting sending a pharmacy prescription order to a pharmacy in accordance with certain embodiments;

Figure **50D** depicts a flowchart of further details of **1106** of Figure **23** supporting  
20 determining a routing chain of physician extenders and embedding the routing chain into a second patient query in accordance with certain embodiments;

Figure **50E** depicts a flowchart of further details of **1178** of Figure **24** supporting determining successor physician extenders in an embedded physician extender routing chain, generating a successor medical query message with embedded  
25 proposed patient response and sending the successor patient medical query to the successor physician extender;

Figure **50F** depicts a flowchart of further details of **646** of Figure **6** supporting generating a routing tree of physicians with first physician final destination and source list of physicians, generating and sending a source medical query to each  
30 physician included in the physician source list;

5 Figure **51** depicts a more detailed flow diagram of an embodiment of the invention in accordance with certain embodiments;

Figure **52** depicts an interactive flow between a client using a first message interface, service profiler performing a service profiler process and service provider using a second message interface in accordance with an embodiment of  
10 the invention;

Figure **52A** depicts an interactive flow between a client using a first message interface, service profiler performing a service profiler process and service provider using a second message interface in accordance with a further embodiment of the invention;

15 Figure **53** depicts a flowchart of operations supporting the generation and sending of an educated query by a client using the first message interface in accordance with embodiments supporting Figure **52**;

Figure **54** depicts a flowchart of operations supporting the reception, processing, logging of the educated query message from the client, and the generation and  
20 sending of the client service query message to a service provider by the service profiler process performed by the service profiler in accordance with embodiments supporting Figure **52**;

Figure **55** depicts a flowchart of operations supporting reception, processing and viewing the client service query message by the second message interface for  
25 the service provider in accordance with embodiments supporting Figure **52**;

Figure **56** depicts a flowchart of operations supporting reception, generation and sending a client response message, as well as copying the client response message with an appended service provider billing data to the service profiler address in accordance with embodiments supporting Figure **52**;

5 Figure **57** depicts a flowchart of operations supporting the reception, processing, logging the copied client response message with an appended service provider billing data by the service profiler process performed by the service profiler in accordance with embodiments supporting Figure **52**;

10 Figure **58** depicts a flowchart of operations supporting reception, processing and display of the client response message using the first message interface on the client operated computer in accordance with embodiments supporting Figure **52**;

Figure **59** depicts a flowchart of further details regarding operation **2604**, generation of an educated query message by the first message interface in accordance with embodiments supporting Figure **53**;

15 Figure **60** depicts a flowchart of further details regarding operation **2638**, processing the educated query message using the service profiler process performed by the service profiler in accordance with embodiments supporting Figure **54**;

20 Figure **61** depicts a flowchart of further details regarding operation **2642**, generation of a client service query message by the service profiler process performed by the service profiler in accordance with embodiments supporting Figure **54**;

25 Figure **62** depicts a flowchart of further details regarding operation **2678**, processing the received client service query message by the second message interface in accordance with embodiments supporting Figure **55**;

Figure **63** depicts a flowchart of further details regarding operation **2722**, copying the client response message with appended service provider billing data to the service profiler by the second message interface in accordance with embodiments supporting Figure **56**;

5 Figure **64** depicts a flowchart of further details regarding operation **2748**, processing the received, copied the client response message with appended service provider billing data using the service profiler process performed by the service profiler in accordance with embodiments supporting Figure **57**;

10 Figure **65** depicts a flowchart of further details regarding operation **2708**, generating client response message using the second message interface in accordance with embodiments supporting Figure **56**;

Figure **66** depicts a flowchart of further details regarding operation **2778**, processing the received client response message using the first message interface in accordance with embodiments supporting Figure **58**;

15 Figure **67** depicts a flowchart of further details regarding operation **2712**, sending the client response message with appended service provider billing data using the service profiler process performed by the service profiler in accordance with embodiments supporting Figure **56**;

20 Figure **68** depicts a flowchart of further details regarding operation **2708**, generating the client response message using the second message interface in accordance with embodiments supporting Figure **56**;

Figure **69** depicts a flowchart of operations of the service profiler process performed by the service profiler in accordance with alternative embodiments supporting Figure **52**;

25 Figure **70** depicts a flowchart of further details regarding operation **3048**, processing the client response message destined for the client using the service profiler process performed by the service profiler in accordance with embodiments supporting Figure **69**;

5     Figure **71** depicts a flowchart of further details regarding operation **2642**,  
generating a client service query message using the service profiler process  
performed by the service profiler in accordance with embodiments;

Figure **72** depicts a flowchart of operations using the third message interface on  
the service extender computer in accordance with embodiments supporting  
10     Figure **57**;

Figure **73** depicts a flowchart of further details regarding operation **2602**,  
generating the service-provider-viewable client service query message in  
accordance with embodiments supporting Figures **55**;

15     Figure **74** depicts a flowchart of further details regarding operation **2708**,  
generating the client response message using the second message interface in  
accordance with embodiments supporting Figure **56**;

Figure **75** depicts a flowchart of further operations embodying the third message  
interface in accordance with certain embodiments;

20     Figure **76** depicts a flowchart of further operations embodied in the message  
profiler process in accordance with certain embodiments;

Figure **77** depicts a flowchart of further operations embodied in a second  
message interface in accordance with certain embodiments supporting service  
recommendations;

25     Figure **78** depicts a flowchart of further operations embodied in a service profiler  
in accordance with certain embodiments supporting service recommendations;

Figure **78A** depicts a flowchart of further details regarding operation **3311**,  
integrating a service order in the service profiler process in accordance with  
embodiments supporting Figure **78**;



- 5     Figure **79** depicts a flowchart of further operations embodied in the first message interface in accordance with certain embodiments supporting service recommendations;

Figure **80** depicts a flowchart of further details of operation **3352**, ordering the embedded service recommendation of Figure 79;

- 10    Figure **81** depicts a flowchart of further details of operation **3170** of Figure **73**;

Figure **82** depicts a flowchart of further details of operation **3222** of Figure **75**;

Figure **83** depicts a flowchart of further details of operation **3402** of Figure **82**;

- 15    Figure **84** depicts a flowchart of further operations embodying the message profiler process in accordance with certain embodiments supporting billing clients;

Figure **85** depicts a flowchart of further operations embodying the message profiler process in accordance with certain embodiments further supporting billing clients;

- 20    Figure **86** depicts a flowchart of further operations embodying a billing process in accordance with certain embodiments;

Figure **87** depicts a flowchart of further details of operation **3518** of Figure **86**;

Figure **88** depicts a flowchart of further details of operation **2704** of Figure **56** supporting a service provider requesting a second opinion in accordance with certain embodiments;

- 25    Figure **89** depicts a flowchart of operations embodied in the second message interface supporting a second service provider and a second opinion request in accordance with certain embodiments;

5 Figure **90** depicts a flowchart of operations embodied in a second message interface supporting maintaining a collection of client response templates in accordance with certain embodiments;

Figure **91** depicts a flowchart of further details of operation **2704** of Figure **56** supporting use of a client response template to create a first-service-provider  
10 response in accordance with certain embodiments;

Figure **92** depicts a flowchart of operations embodied in a first message interface to support maintaining a collection of client problem templates in accordance with certain embodiments;

Figure **93** depicts a flowchart of further details of operation **2604** of Figure 53 supporting use of a client problem template to create an educated service query using a first service interface in accordance with certain embodiments;  
15

Figure **94** depicts a flowchart of operations embodied in a service profiler process to generate and send client problem templates to clients in accordance with certain embodiments;

20 Figure **95** depicts a flow diagram of a service profiler process in accordance with certain embodiments;

Figure **96** depicts a flow diagram of a computer program capable of receiving a message from a service provider containing a service recommendation and responding to the message containing the service recommendation by  
25 generating and sending a service order message in accordance with certain embodiments in accordance with an aspect of the invention;

Figure **97** depicts a flowchart of further details of the code of **3854** of Figure **96** supporting receiving a client response message with an embedded service recommendation in accordance with certain embodiments; and

- 5     Figure **98** depicts a flowchart of further details of the code of **3862** of Figure **96** supporting responding to the client response message in accordance with certain embodiments.

Figure **98A** depicts a flowchart of further details of **3311** of Figure **78** supporting integrating a service order in accordance with certain embodiments;

- 10    Figure **98B** depicts a flowchart of further details of **3324** of Figure **78A** supporting generating a supplier service order in accordance with certain embodiments;

Figure **98C** depicts a flowchart of further details of **3326** of Figure **78A** supporting sending a supplier service order to a supplier in accordance with certain embodiments;

- 15    Figure **98D** depicts a flowchart of further details of **3106** of Figure **71** supporting determining a routing chain of service extenders and embedding the routing chain into a second client query in accordance with certain embodiments;

- Figure **98E** depicts a flowchart of further details of **3178** of Figure **72** supporting determining successor service extenders in an embedded service extender routing chain, generating a successor medical query message with embedded proposed client response and sending the successor client medical query to the successor service extender;
- 20

- Figure **98F** depicts a flowchart of further details of **2646** of Figure **53** supporting generating a routing tree of service providers with first service provider final destination and source list of service providers, generating and sending a source medical query to each service provider included in the service provider source list;
- 25

## **Detailed Description of the Invention**

Figure 1 and 2 refer to prior art and were previously discussed in the Background of the invention.

Discussion of Primary Terms as used herein:

A message will refer to a communication session with a source and a destination whose contents can be described in a digital fashion. Examples of messages include but are not limited to phone mail, email and pager messages.

A medical profile of a patient is a collection of information residing in some computer accessible media which from time to time a computer may be able to access.

The medical profiler process is the system-wide activities which are performed in an automated fashion by the workflow engine to facilitate the medical communication between patients, physicians, physician extenders and pharmacies to support at least the following: medical queries, replies and transactions involved in prescriptions.

The workflow engine is the mechanism performing the collection of operations known as the medical profiler process. It has at least one address on the network shared with patients, physicians, physician extenders and pharmacies. Note that this shared network may in fact be partitioned into a collection of networks, each possessing gateways, firewalls and the like as is well known in the art. Note that the workflow engine may include but is not limited to one computer, and in fact, in certain embodiments preferably involves more than one server computer as will be discussed later.

A patient as used herein will have two components of meaning: the first component being the entity about whose health the medical profile, query

5 messages, response message and prescriptions are directed; the second is the responsible adult acting for the patient in all the transactions, such as generating the query messages, receiving and considering the response messages and ordering the prescriptions. Note that a list of the first component entities includes but is not limited to pets, trees, children, the physically incapacitated, the  
10 mentally incapacitated and the emotionally incapacitated.

Figure **3A** depicts a flow diagram of an embodiment of the invention in accordance with certain embodiments. There are two main flows of information likely to be prevalent with users of this invention. The most common flow would be a patient **200** initiate **202** query **204**, where the patient will launch an  
15 electronic message **206**. These messages can subcategorized in four main groups- Request a refill, Schedule an appointment, Consult symptoms with the physician **212** and page the physician **212**. The second possible flow is initiation of messages by the clinic/physician **212** aimed at broadcasting information to patients **200**.

20 At the time of registration or post sending the first consultation/refill request the patient **200** is being asked to fill in his/her medical profile **208**. Medical profile **208** would contain the patient **200**'s medication list, allergies, problems and demographics. The medical profile **208** is then validated by the patient **200**'s medical staff and is approved. Once approved the medical profile **208** is locked  
25 and the patient **200** may not alter the profile. The profile **208** is updated automatically by transactions made by the workflow engine or by the patient's medical staff. In the event that the patient **200** wants to edit the medical profile **208** then the patient initiates a query **204** to the medical staff informing them that the profile needs corrections. The medical staff can with one click approve the  
30 patient query **204** and update the profile **208**.

Figure **3A** portrays the typical flow of a patient **200** initiated query **204**. The patient **200** through the use of a wizard **202**, initiates an educated query **204**.

5 Using a problem-related database and knowledge of the patient medical profile  
208, the application generates a problem specific questioner (form). This form is  
both problem and patient 200 specific. The form is advantageous in that it  
removes the need for a great deal of typing on behalf of the patient 200. It is  
further advantageous in decreasing the need for message ping pong between  
10 the patient 200 and the physician 212 due to insufficient data. It is further  
advantageous in allowing the physician 212 to read a more readable and  
intelligent format than that of a patient 200 free text waffle.

The next step in the flow of the message is attaching the summary of the patient  
medical record or as we call it 'medical profile' 208 to the message. The patient  
15 200 initiates the medical profile at the point of registration to the workflow engine  
or at the time of the first refill/consult request. The patient 200 is asked by the  
workflow engine to fill in his/her medical profile i.e. problems allergies and  
medications. This medical profile 208 is interactive and will be later validated by  
the nurse 242 or physician 212. Once validated for the first time it is locked and  
20 the patient 200 can no longer tamper with the data. Any prescription 252 sent  
through the workflow engine automatically updates the medical profile 208. The  
patient 200 may add data to the 'locked' medical profile 208 but that data will not  
be embedded in the medical profile 208 prior to the physician 212 or his staff  
validating the new data. The workflow engine attaches the medical profile 208 to  
25 any patient related document thus avoids the need for a chart pull at the point of  
care, plus it allows the patient 200 to present the medical profile 208 to foreign  
physicians 212 when on the move.

The workflow engine then takes the message and the medical profile 208  
attached and routes it to the proper physician extender according to the type of  
30 message sent. As an example, a refill messages would be routed to the nurse  
242, an urgent scheduling query will also get to the nurse 242, a non-urgent  
query will be routed to the scheduling desk. This process allows the physician  
212 to share the workload with his extenders.

5 Each member of the physician's staff can create his own canned replies **246**. These are replies that were typed once by the staff were saved and may be pasted with two clicks to message bodies of future replies. With many physicians complaining about repetitious replies to their patients this tool allows both the saving of time and a reduction in typing need. The pasted 'canned replies' are  
10 then editable and customizable.

Once edited and filled by the medical staff the messages are routed to the physician **212** who in most cases needs to do nothing more then approve his staff's work and in a single click send the message to the patient **200**. The physician **212** at this stage may determine a fee for the service and add  
15 educational material **220** and pointers (from a library) to sites of further patient education. The workflow engine notifies the patient **200** via regular e-mail ([patient@aol.com](mailto:patient@aol.com)) that a message is waiting for him in his Healinx inbox and provides an hyperlink to lead the patient **200** to his Healinx inbox.

The physician/physician extender may also prescribe medication and attach it to  
20 the outgoing message, this in turn checks the medication using a licensed database against the patient's medical profile for drug/drug, drug/allergy conflicts and alerts the physician. It also allows us to attach education material to the prescription alerting the patient **200** for possible side effects and actions that should or should not be taken with the prescribed medication. Education material  
25 **220** taken from the database is attached to the prescription and can be viewed by the patient **200**.

The patient **200** reading the message views the embedded prescription and has the choice of ordering **264** the prescription in the pharmacy of his choice to be delivered from an online pharmacy **260** or to be picked up from his favorite brick  
30 and mortar traditional pharmacy **260**. In addition in the event that the patient **200** is on the move then he may choose with a single click the closest pharmacy **260**

5 and the prescription will be electronically shipped to that pharmacy **260** at no extra cost or hassle.

Physicians **212** may set the workflow engine to allow patient **200** paging, the message **204** typed by the patient **200** will be sent to the physician **212** over pager or phone. The physician **212** can then request **214** additional information  
10 such as the patient medical profile and initiate a call back **216** to the patient **200**. The physician **212** may set up the times of day he willing to be accessible by pager and the pricing per beep dependant on the time of day.

Further embodiments of the invention support the workflow engine creating routing chains of physician extenders starting with a first physician extender  
15 proceeding through successor physician extenders until the routing chain terminates with a physician reviewing the collective proposed patient response. The routing chain may be generated by the workflow engine based upon the patient's educated query message.

Further embodiments of the invention support the workflow engine creating  
20 routing trees of physicians with patent query messages starting with a source list of physicians, possibly routing to intermediate physicians and culminating in a first physician who reviews the collective physician responses to their respective patient medical queries.

Using outsourced solutions, the patients **200** can monitor their readings of blood  
25 pressure, sugar level, or other monitoring and transmit it to Healinx. We then take the readings and imbed these in the patient medical profile **208**. If abnormal readings are found both patient **200** and physician **212** are notified.

Through an embedded database and the patient's medical profile **208** the workflow engine searches for patient **200** as to who should schedule a preventive  
30 examination. As an example the workflow engine would remind all women 25-45 to schedule a mammogram. The workflow engine will hold a customized



5 preventive health calendar per patient **200** and remind that patient **200** to schedule an appointment if needed.

Through the medical profile **208** of patient **200**'s the workflow engine will allow clinics to search for certain patient characteristics. Using this filter the clinic can rapidly create variable patient mailing lists to which they can mail at once. For  
10 example in the event that the clinic seeks to contact all males aged 25-45 who are smokers that take Prozac.

Further embodiments of the invention include the capability for a vendor to author templates and routing them through an authoring tool. Templates would be descriptions of the most common customer queries. The templates would  
15 support the customer diagnostics of the problem and allow the customer to provide a comprehensive description of the problem encountered.

The customer can then be provided with the most common solutions to the diagnosis. And allow the client to choose whether the off-the-shelf reply is adequate or not. If not then the customer may send the query to the vendor. For  
20 premium pricing the customer may page and get an immediate phone response.

Identifying the template used allows triage of the mail into the most adequate department for reply. This allows the people in charge of replying to customize their replies and paste these in the message body. The message according to its severity can then be sent to a supervisor for approval or directly to the patient  
25 **200**.

The vendor may attach a prescription (the spare part needed) and allow the patient **200** to choose the most convenient service center. The order is then sent to a service center of the customer's **200** choice and authorization and pricing of the entire service are controlled by the vendor.

5 service tasks under the direction of physicians **212**. Arrow **234** depicts the sending of proposed patient response messages generated by physician extenders **232** to a physician **212**. Arrow **240** depicts another message information flow from the workflow engine to a nurse **242**. While nurses are physician extenders, a nurse **242** performs a specific additional task  
 10 distinguishing them from other physician extenders, such as physician assistants and administrators. Nurse **242** can propose prescription refills for example. Arrow **244** depicts the sending of proposed patient response message, which may further include proposed embedded prescription refills, from nurse **242** to physician **246**.

15 Physician **212** performs a review on the proposed patient response messages from physician extenders, including nurses, as delivered by arrows **234** and **244**. Template replies **246** offer the capability for physicians to optimize the quality and efficiency of response in making many standard replies. Arrow **248** depicts the interaction between template replies **246** and physician **212**.

20 Arrow **250** depicts the information and activity flow based upon the consultative response **216** and the placing of a prescription message **252**. Prescription message **252** is created based upon the physician's consultative response **216**, which in turn is based upon the patient's medical query message and possibly a nurse's proposed prescription refill. Arrow **254** depicts sending a prescription  
 25 message **252** to ordering process **256**. Patient **200** receives the patient response message **226**, and may respond by ordering the embedded prescription, which is depicted by arrow **264** indicating a patient prescription message sent to ordering process **256**. Ordering process **256** waits until both the physician prescription message **254** and patient prescription message **264** have been received and  
 30 processed before the order **258** is actually placed with pharmacy **260**. Pharmacy **260** sends the prescription to patient **300** as indicated by arrow **362**.

5 Figure 4 depicts an interactive flow between a patient using a first messaging wizard, workflow engine performing a medical profiler process and physician using a second messaging wizard in accordance with an embodiment of the invention. Patient 300 interacts 302 with patient operated computer 304, which can access 306 and perform the operations of first messaging wizard 308.

10 Physician 350 interacts 352 with physician operated computer 354, which can access 356 and perform the operations of second messaging wizard 358. Physician extender 400 interacts 402 with physician extender operated computer 404, which can access 406 and perform the operations of second messaging wizard 408.

15 Patient 300 using first messaging wizard 308 on patient operated computer 304 generates 310 educated query message 312 and sends it 314 to workflow engine 320 where it is received by medical profiler process 322. Medical profiler process 322 generates 324 patient message log entry 326, which is added 328 to the patient medical profile 330. Medical profiler process 322 further generates

20 340 patient medical query message 342, which is sent 344 to physician operated computer 354.

Physician 350 using second messaging wizard 358 on physician operated computer 354 receives and responds to the patient medical query message 342, generating 360 a patient response message 362, which in certain embodiments

25 is sent 364 directly to the patient operated computer 304. In certain alternative embodiments, patient response message 362 is sent 370 to the workflow engine, where the medical profiler process 322 then sends 372 a version to the patient operated computer 304. Physician 350 using second messaging wizard 358 on physician operated computer 354 further responds to the patient medical query

30 message 342, generating a patient response message with appended physician billing data 382, which is sent 384 to to the workflow engine, where the medical profiler process 322 then generates 390 a patient response log entry 392 which is added 394 to the patient medical profile 330.

5 In certain situations, a prescription is embedded into patient response message  
362 by the physician 350 using second messaging wizard 358 on physician  
operated computer 354 in response to the patient medical query message 342,  
which embedded into the patient response message 362. Physician 350 using  
second messaging wizard 358 on physician operated computer 354 also  
10 generates 480 physician prescription message 482, which is sent 484 to the  
workflow engine using the medical profiler process 322. Patient 300 using first  
messaging wizard 308 on patient operated computer 304 generates 490 patient  
prescription order message 492 and sends it 494 to workflow engine 320 where it  
is received by medical profiler process 322. Once both physician prescription  
15 message 482 and patient prescription order message 492 have been received  
and authenticated, the medial profiler process 322 generates 500 a pharmacy  
prescription order message 502 which is sent 504 to the pharmacy computer  
506.

Medical profiler process 322 accesses 510 the patient medical profile 330 to  
20 generate 512 patient billing report message 514 which is sent 516 to billing  
system 518. Note that the billing system 518 in certain embodiments is a  
separate system element external to the workflow engine. In certain alternative  
embodiments, billing system 518 resides within the operations performed by the  
workflow engine. In certain further embodiments, billing system 518 is part of the  
25 medical profiler process.

Medical profiler process 322 further generates 400 a second patient medical  
query message 402, which is sent 404 to physician extender operated computer  
414. Physician extender 410 using third messaging wizard 418 on physician  
operated computer 414 receives and responds to the second patient medical  
30 query message 412, generating 430 a proposed patient response message 432,  
which is sent 434 directly to the physician operated computer 354, where it is  
inserted into the patient medical query message 342. In certain alternative  
embodiments, patient response message 432 is sent 436 to the workflow engine,

where the medical profiler process **322** then sends a version to the physician operated computer **354**. Physician extender **410** using third messaging wizard **418** on physician operated computer **414** further responds **440** to the second patient medical query message **402**, generating a proposed patient response message with appended physician extender billing data **442**, which is sent **444** to the workflow engine, where the medical profiler process **322** then generates **450** a proposed patient response with appended physician extender billing data log entry **452** which is added **454** to the patient medical profile **330**.

Note that in the flowcharts included herein, the starting operation of a flowchart may perform operations to allocate systems resources for use by the subsequent operations of the flowchart in certain embodiments. The starting operation of a flowchart may further perform initialize systems resources in certain embodiments.

Note also that in the flowcharts included herein, the terminating or exit operation of a flowchart may perform operations to release allocated systems resources used by the subsequent operations of the flowchart in certain embodiments. The terminating operation of a flowchart may further perform a “return” operation in certain embodiments. Alternatively, the terminating operation of a flowchart may not perform a “return” operation in certain embodiments.

Figure **5** depicts a flowchart of operations supporting the generation and sending of an educated query by a patient using the first messaging wizard in accordance with embodiments supporting Figure **4**. Operation **600** starts the operations of this flowchart. Arrow **602** directs the flow of execution from operation **600** to operation **604**. Operation **604** performs generating of an educated query message. Arrow **606** directs execution from operation **604** to operation **608**. Operation **608** performs sending the educated query message to the workflow engine. Arrow **610** directs execution from operation **608** to operation **612**. Operation **612** terminates the operations of this flowchart.

5 Figure 6 depicts a flowchart of operations supporting the reception, processing, logging of the educated query message from the patient, and the generation and sending of the patient medical query message to a physician by the medical profiler process performed by the workflow engine in accordance with embodiments supporting Figure 4. Operation 630 starts the operations of this flowchart. Arrow 632 directs the flow of execution from operation 630 to operation 634. Operation 634 performs receiving the educated query message at the workflow engine. Arrow 636 directs execution from operation 634 to operation 638. Operation 638 performs processing the received educated query message to create the processed, received educated query message. Arrow 640 directs execution from operation 638 to operation 642. Operation 642 performs generating a patient medical query message. Arrow 644 directs execution from operation 642 to operation 646. Operation 646 performs sending the patient medical query message to first physician at corresponding physician address. Arrow 648 directs execution from operation 646 to operation 650. Operation 650 terminates the operations of this flowchart.

In certain embodiments, operation 646 further includes selecting a first physician. In certain further embodiments, operation 646 further includes selecting a first physician based upon the received educated query message. In certain further embodiments, operation 646 further includes selecting a first physician based upon the processed, received educated query message.

Arrow 652 directs the flow of execution from starting operation 638 to operation 654. Operation 654 performs generating a patient message log entry in the patient medical profile. Arrow 656 directs execution from operation 654 to operation 650.

Figure 7 depicts a flowchart of operations supporting reception, processing and viewing the patient medical query message by the second message wizard for the physician in accordance with embodiments supporting Figure 4. Operation

5 **670** starts the operations of this flowchart. Arrow **672** directs the flow of execution from operation **670** to operation **674**. Operation **674** performs receiving the patient query message. Arrow **676** directs execution from operation **674** to operation **678**. Operation **678** performs processing the received patient medical query message to create the processed, received patient medical  
10 message. Arrow **680** directs execution from operation **678** to operation **682**. Operation **682** performs generating a physician-viewable patient medical query message from the processed, received patient medical query message. Arrow **684** directs execution from operation **682** to operation **686**. Operation **686** performs displaying the physician-viewable patient medical query message.  
15 Arrow **688** directs execution from operation **686** to operation **690**. Operation **690** terminates the operations of this flowchart.

Figure 8 depicts a flowchart of operations supporting reception, generation and sending a patient response message, as well as copying the patient response message with an appended physician billing data to the workflow engine in accordance with embodiments supporting Figure 4. Operation **700** starts the  
20 operations of this flowchart. Arrow **702** directs the flow of execution from operation **700** to operation **704**. Operation **704** performs responding to the physician-viewable patient medical query message to create a first-physician response. Arrow **706** directs execution from operation **704** to operation **708**.  
25 Operation **708** performs generating a patient response message from the first-physician response. Arrow **710** directs execution from operation **708** to operation **712**. Operation **712** performs sending the patient response message to the patient at the corresponding patient address. Arrow **714** directs execution from operation **712** to operation **716**. Operation **716** terminates the operations of this  
30 flowchart.

Arrow **720** directs the flow of execution from starting operation **708** to operation **722**. Operation **722** performs copying the patient response message with

5 appended physician billing data to workflow engine. Arrow **724** directs execution from operation **722** to operation **716**.

Figure **9** depicts a flowchart of operations supporting the reception, processing, logging the copied patient response message with an appended physician billing data by the medical profiler process performed by the workflow engine in accordance with embodiments supporting Figure **4**. Operation **740** starts the operations of this flowchart. Arrow **742** directs the flow of execution from operation **740** to operation **744**. Operation **744** performs receiving the copied patient response message with appended physician billing data. Arrow **746** directs execution from operation **744** to operation **748**. Operation **748** performs processing the received, copied patient response message with appended physician billing data to create the processed, received, copied patient response message with appended physician billing data. Arrow **750** directs execution from operation **748** to operation **752**. Operation **752** performs generating a patient response log entry in patient medical profile from the processed, received, copied patient response message with appended physician billing data. Arrow **754** directs execution from operation **752** to operation **756**. Operation **756** terminates the operations of this flowchart.

Figure **10** depicts a flowchart of operations supporting reception, processing and display of the patient response message using the first messaging wizard on the patient operated computer in accordance with embodiments supporting Figure **4**. Operation **Q0** starts the operations of this flowchart. Arrow **772** directs the flow of execution from operation **770** to operation **774**. Operation **774** performs receiving the patient response message. Arrow **776** directs execution from operation **774** to operation **778**. Operation **778** performs processing the received patient response message, to create a processed, received patient response message. Arrow **780** directs execution from operation **778** to operation **782**. Operation **782** performs displaying the processed, received patient response



5 message. Arrow **784** directs execution from operation **782** to operation **786**. Operation **786** terminates the operations of this flowchart.

Figure **11** depicts a flowchart of further details regarding operation **604**, generation of an educated query message by the first messaging wizard in accordance with embodiments supporting Figure 5. Arrow **800** directs the flow of execution from starting operation **604** to operation **802**. Operation **802** performs providing a patient-to-profiler authentication key. Arrow **804** directs execution from operation **802** to operation **806**. Operation **806** performs encrypting the educated query message with patient-to-profiler authentication key. Arrow **808** directs execution from operation **806** to operation **810**. Operation **810** terminates the operations of this flowchart.

Figure **12** depicts a flowchart of further details regarding operation **638**, processing the educated query message using the medical profiler process performed by the workflow engine in accordance with embodiments supporting Figure 6. Arrow **820** directs the flow of execution from starting operation **638** to operation **822**. Operation **822** performs providing a profiler-from-patient authentication key. Arrow **824** directs execution from operation **822** to operation **826**. Operation **826** performs decrypting the received, educated query message with profiler-from-patient authentication key. Arrow **828** directs execution from operation **826** to operation **830**. Operation **830** terminates the operations of this flowchart.

Figure **13** depicts a flowchart of further details regarding operation **642**, generation of a patient medical query message by the medical profiler process performed by the workflow engine in accordance with embodiments supporting Figure 6. Arrow **850** directs the flow of execution from starting operation **642** to operation **852**. Operation **852** performs providing profiler-from-first-physician authentication key. Arrow **854** directs execution from operation **852** to operation **856**. Operation **856** performs encrypting patient medical query message with

5 profiler-from-first-physician authentication key. Arrow **858** directs execution from operation **856** to operation **860**. Operation **860** terminates the operations of this flowchart.

Figure **14** depicts a flowchart of further details regarding operation **678**, processing the received patient medical query message by the second  
10 messaging wizard in accordance with embodiments supporting Figure 7. Arrow **880** directs the flow of execution from starting operation **678** to operation **882**. Operation **882** performs providing a first-physician-from-profiler authentication key. Arrow **884** directs execution from operation **882** to operation **886**. Operation **886** performs decrypting the received patient medical query message  
15 with the first-physician-from-profiler authentication key. Arrow **888** directs execution from operation **886** to operation **890**. Operation **890** terminates the operations of this flowchart.

Figure **15** depicts a flowchart of further details regarding operation **722**, copying the patient response message with appended physician billing data to the  
20 workflow engine by the second messaging wizard in accordance with embodiments supporting Figure 8. Arrow **900** directs the flow of execution from starting operation **722** to operation **902**. Operation **902** performs providing a first-physician-to-profiler authentication key. Arrow **904** directs execution from operation **902** to operation **906**. Operation **906** performs encrypting the patient  
25 response message with appended physician billing data with the first-physician-to-profiler authentication key. Arrow **908** directs execution from operation **906** to operation **910**. Operation **910** performs sending first-physician-to-profiler encrypted patient response message with appended physician billing data to the workflow engine. Arrow **912** directs execution from operation **910** to operation  
30 **914**. Operation **914** terminates the operations of this flowchart.

Figure **16** depicts a flowchart of further details regarding operation **748**, processing the received, copied the patient response message with appended

5 physician billing data using the medical profiler process performed by the workflow engine in accordance with embodiments supporting Figure 9. Arrow **930** directs the flow of execution from starting operation **748** to operation **932**. Operation **932** performs providing a profiler-from-first-physician authentication key. Arrow **934** directs execution from operation **932** to operation **936**.  
10 Operation **936** performs decrypting the received, copied patient response message with appended physician billing data with the profiler-from-first physician authentication key to create the processed, received patient response message with appended physician billing data. Arrow **938** directs execution from operation **936** to operation **940**. Operation **940** terminates the operations of this  
15 flowchart.

Figure 17 depicts a flowchart of further details regarding operation **708**, generating patient response message using the second message wizard in accordance with embodiments supporting Figure 8. Arrow **950** directs the flow of execution from starting operation **708** to operation **952**. Operation **952** performs  
20 providing first-physician-to-patient authentication key. Arrow **954** directs execution from operation **952** to operation **956**. Operation **956** performs generating an unencrypted patient response message from the physician-viewable patient medical query message and the first-physician response. Arrow **958** directs execution from operation **956** to operation **960**. Operation **960**  
25 performs encrypt the unencrypted patient response message with the first-physician-to-patient authentication key to create the patient response message. Arrow **962** directs execution from operation **960** to operation **964**. Operation **964** terminates the operations of this flowchart.

Note that operations **952** and **956** may be performed either in the order  
30 presented by this flowchart, or in certain alternative embodiments, in the reverse order to that shown, or further alternatively, concurrently with each other.

5 Figure **18** depicts a flowchart of further details regarding operation **778**, processing the received patient response message using the first message wizard in accordance with embodiments supporting Figure **10**. Arrow **980** directs the flow of execution from starting operation **778** to operation **982**. Operation **982** performs providing a patient-from-first-physician authentication key. Arrow **984** directs execution from operation **982** to operation **986**. Operation **986** performs decrypting the received patient response message with the patient-from-first-physician authentication key to create the processed, received patient response message. Arrow **988** directs execution from operation **986** to operation **990**. Operation **990** terminates the operations of this flowchart.

15 Figure **19** depicts a flowchart of further details regarding operation **712**, sending the patient response message with appended physician billing data using the medical profiler process performed by the workflow engine in accordance with embodiments supporting Figure **8**. Arrow **1000** directs the flow of execution from starting operation **712** to operation **1002**. Operation **1002** performs sending patient response message destined to patient to workflow engine. Arrow **1004** directs execution from operation **1002** to operation **1006**. Operation **1006** terminates the operations of this flowchart.

25 Figure **20** depicts a flowchart of further details regarding operation **708**, generating the patient response message using the second message wizard in accordance with embodiments supporting Figure **8**. Arrow **1010** directs the flow of execution from starting operation **708** to operation **1012**. Operation **1012** performs providing the first-physician-to-profiler authentication code. Arrow **1014** directs execution from operation **1012** to operation **1016**. Operation **1016** performs providing the patient address as destination address within the patient response message, to create an unencrypted patient response message with patient address destination. Arrow **1018** directs execution from operation **1016** to operation **1020**. Operation **1020** performs encrypting the unencrypted patient response message with the first-physician-to-profiler authentication code to

5 create the patient response message destined for the patient at the corresponding patient address. Arrow **1022** directs execution from operation **1020** to operation **1024**. Operation **1024** terminates the operations of this flowchart.

Note that operations **1012** and **1016** in certain alternative embodiments may be performed in reverse order, and in certain further alternative embodiments, may be concurrently performed.

Figure **21** depicts a flowchart of operations of the medical profiler process performed by the workflow engine in accordance with alternative embodiments supporting Figure 4. Operation **1040** starts the operations of this flowchart. Arrow **1042** directs the flow of execution from operation **1040** to operation **1044**. Operation **1044** performs receiving the patient response message destined for the patient at the corresponding patient address. Arrow **1046** directs execution from operation **1044** to operation **1048**. Operation **1048** performs processing the received patient response message destined for the patient at the corresponding patient address, to create the patient response message for the patient at the corresponding patient address. Arrow **1050** directs execution from operation **1048** to operation **1052**. Operation **1052** performs sending the patient response message to the patient at the corresponding patient address. Arrow **1054** directs execution from operation **1052** to operation **1056**. Operation **1056** terminates the operations of this flowchart.

Figure **22** depicts a flowchart of further details regarding operation **1048**, processing the patient response message destined for the patient using the medical profiler process performed by the workflow engine in accordance with embodiments supporting Figure 21. Arrow **1070** directs the flow of execution from starting operation **1048** to operation **1072**. Operation **1072** performs providing a profiler-from-first-physician authentication key. Arrow **1074** directs execution from operation **1072** to operation **1076**. Operation **1076** performs

5 decrypting the received patient response message destined for the patient at the corresponding patient address to create the processed, received patient response message for the patient at the corresponding patient address. Arrow **1078** directs execution from operation **1076** to operation **1080**. Operation **1080** terminates the operations of this flowchart.

10 Figure **23** depicts a flowchart of further details regarding operation **642**, generating a patient medical query message using the medical profiler process performed by the workflow engine in accordance with embodiments. Arrow **1100** directs the flow of execution from starting operation **642** to operation **1102**. Operation **1102** performs selecting a first physician extender from the physician extenders. Arrow **1104** directs execution from operation **1102** to operation **1106**. Operation **1106** performs generating a second patient medical query message for the first physician extender. Arrow **1108** directs execution from operation **1106** to operation **1110**. Operation **1110** performs sending the second patient medical query message to the first physician extender at the corresponding physician extender address. Arrow **1112** directs execution from operation **1110** to operation **1114**. Operation **1114** terminates the operations of this flowchart.

Note that in certain embodiments, operation **1102** is based upon the received educated query message. In certain further embodiments, operation **1102** is based upon the processed, received educated query message.

25 Figure **24** depicts a flowchart of operations using the third message wizard on the physician extender computer in accordance with embodiments supporting Figure **9**. Operation **1150** starts the operations of this flowchart. Arrow **1152** directs the flow of execution from operation **1150** to operation **1154**. Operation **1154** performs receiving a second patient message by first physician extender operating a computer at the corresponding physician extender address. Arrow **1156** directs execution from operation **1154** to operation **1158**. Operation **1158** performs processing the received second patient medical query message to

5 create a processed, received second patient medical query message. Arrow  
**1160** directs execution from operation **1158** to operation **1162**. Operation **1162**  
performs generating a physician extender-viewable patient medical query  
message from the processed, received second patient medical query message.  
Arrow **1164** directs execution from operation **1162** to operation **1166**. Operation  
10 **1166** performs displaying the physician extender-viewable medical query  
message. Arrow **1168** directs execution from operation **1166** to operation **1170**.  
Operation **1170** performs responding to the physician extender-viewable medical  
query message to create a physician extender response. Arrow **1172** directs  
execution from operation **1170** to operation **1174**. Operation **1174** performs  
15 generating the proposed patient response message from physician extender  
response. Arrow **1176** directs execution from operation **1174** to operation **1178**.  
Operation **1178** performs sending the proposed patient response message to the  
first physician at the corresponding physician address. Arrow **1180** directs  
execution from operation **1178** to operation **1182**. Operation **1182** terminates the  
20 operations of this flowchart.

Figure **25** depicts a flowchart of further details regarding operation **682**,  
generating the physician-viewable patient medical query message in accordance  
with embodiments supporting Figures 7. Arrow **1200** directs the flow of execution  
from starting operation **682** to operation **1202**. Operation **1202** performs  
25 receiving proposed patient response message from first physician extender.  
Arrow **1204** directs execution from operation **1202** to operation **1206**. Operation  
**1206** performs processing the received patient response message to create  
processed, received patient response message. Arrow **1208** directs execution  
from operation **1206** to operation **1210**. Operation **1210** performs inserting the  
30 processed, received proposed patient response message as part of the  
physician-viewable patient medical query message. Arrow **1212** directs  
execution from operation **1210** to operation **1214**. Operation **1214** terminates the  
operations of this flowchart.

5 Figure **26** depicts a flowchart of further details regarding operation **708**, generating the patient response message using the second message wizard in accordance with certain embodiments. Arrow **1220** directs the flow of execution from starting operation **708** to operation **1222**. Operation **1222** performs reviewing the proposed patient response message. Arrow **1224** directs  
10 execution from operation **1222** to operation **1226**. Operation **1226** terminates the operations of this flowchart.

Figure **27** depicts a flowchart of further operations embodying the third message wizard in accordance with certain embodiments. Arrow **1240** directs the flow of execution from starting operation **1240** to operation **1242**. Operation **1242**  
15 performs generating a copied proposed patient response message with appended physician extender billing data from the physician extender-viewable patient medical query message and first physician extender response. Arrow **1244** directs execution from operation **1242** to operation **1246**. Operation **1246** performs sending copied proposed patient response with appended physician  
20 extender billing data to workflow engine. Arrow **1248** directs execution from operation **1246** to operation **1250**. Operation **1250** terminates the operations of this flowchart.

Figure **28** depicts a flowchart of further operations embodied in the message profiler process in accordance with certain embodiments. Operation **1270** starts  
25 the operations of this flowchart. Arrow **1272** directs the flow of execution from operation **1270** to operation **1274**. Operation **1274** performs receiving the copied proposed patient response message with the appended physician extender billing data. Arrow **1276** directs execution from operation **1274** to operation **1278**. Operation **1278** performs processing the received copied proposed patient  
30 response message with the appended physician extender billing data, to create a processed, received copied proposed patient response message with the appended physician extender billing data. Arrow **1280** directs execution from operation **1278** to operation **1282**. Operation **1282** performs generating a



5 physician extender log entry in the medical profile of the patient from the processed, received copied patient response message with the appended physician extender billing data. Arrow 1284 directs execution from operation 1282 to operation 1286. Operation 1286 terminates the operations of this flowchart.

10 Figure 29 depicts a flowchart of further operations embodied in a second messaging wizard in accordance with certain embodiments supporting prescriptions. Operation 1290 starts the operations of this flowchart. Arrow 1291 directs the flow of execution from operation 1290 to operation 1292. Operation 1292 performs generating an embedded prescription. Arrow 1293 directs  
15 execution from operation 1292 to operation 1294. Operation 1294 performs inserting the embedded prescription into patient response message. Arrow 1295 directs execution from operation 1294 to operation 1296. Operation 1296 performs generating a physician prescription message from the embedded prescription. Arrow 1297 directs execution from operation 1296 to operation  
20 1298. Operation 1298 performs sending the physician prescription message to the workflow engine. Arrow 1299 directs execution from operation 1298 to operation 1300. Operation 1300 terminates the operations of this flowchart.

Figure 30 depicts a flowchart of further operations embodied in a medical profiler in accordance with certain embodiments supporting prescriptions. Operation  
25 1305 starts the operations of this flowchart. Arrow 1306 directs the flow of execution from operation 1305 to operation 1307. Operation 1307 performs maintaining a list of pharmacies, each with a corresponding pharmacy address. Arrow 1308 directs execution from operation 1307 to operation 1309. Operation 1309 terminates the operations of this flowchart.

30 Arrow 1310 directs the flow of execution from starting operation 1305 to operation 1311. Operation 1311 performs integrating a prescription order. Arrow

5     **1312** directs execution from operation **1311** to operation **1309**. Operation **1309** terminates the operations of this flowchart.

Note that arrows **1306** and **1310** may be concurrently active, the pharmacy list may be undergoing maintenance operations and the integration of prescription orders may be performed concurrently on either the same computer or distinct  
10   computers according to various embodiments of the invention.

Figure **30A** depicts a flowchart of further details regarding operation **1311**, integrating a prescription order in the medical profiler process in accordance with embodiments supporting Figure **30**. Arrow **1315** directs the flow of execution from the starting of operation **1311** to operation **1316**. Operation **1316** performs  
15   receiving the physician prescription message. Arrow **1317** directs execution from operation **1316** to operation **1318**. Operation **1318** performs processing the received physician prescription message, to create a processed, received physician prescription message.

Arrow **1319** directs execution from operation **1311** to operation **1320**. Operation  
20   **1320** performs receiving a patient prescription order message. Arrow **1321** directs execution from operation **1320** to operation **1322**. Operation **1322** performs processing the received patient prescription order message to create a processed, received patient prescription order message.

Arrow **1323** directs execution from operation **1322** to operation **1324**. Arrow **1330**  
25   directs execution from operation **1318** to operation **1324**. Note that in certain embodiments, both arrows **1323** and **1330** must perform their flow of execution before operation **1324** can execute. Operation **1324** performs generating a pharmacy prescription order message from the processed, received physician prescription message and the processed, received patient prescription order  
30   message. Arrow **1325** directs execution from operation **1324** to operation **1326**. Operation **1326** performs sending the pharmacy prescription order message to one of the pharmacies at the corresponding pharmacy address. Arrow **1327**

5 directs execution from operation **1326** to operation **1328**. Operation **1328** terminates the operations of this flowchart.

Figure **31** depicts a flowchart of further operations embodied in the first messaging wizard in accordance with certain embodiments supporting prescriptions. Operation **1340** starts the operations of this flowchart. Arrow **1342**  
10 directs the flow of execution from operation **1340** to operation **1344**. Operation **1344** performs responding to the embedded prescription within the processed, received patient response message. Arrow **1346** directs execution from operation **1344** to operation **1348**. Operation **1348** terminates the operations of this flowchart.

15 Arrow **1350** directs the flow of execution from starting operation **1340** to operation **1352**. Operation **1352** performs ordering the embedded prescription from the processed, received patient response message. Arrow **1354** directs execution from operation **1352** to operation **1348**. Operation **1348** terminates the operations of this flowchart.

20 Note that in certain embodiments, the starting operation may act as a branching mechanism. Such a mechanism can be driven by patient choices via a user interface, such as buttons or pull down menus being selected or pushed.

Figure **32** depicts a flowchart of further details of operation **1352**, ordering the embedded prescription of Figure **31**. Arrow **1360** directs the flow of execution  
25 from starting operation **1352** to operation **1362**. Operation **1362** performs generating a patient prescription message from the processed, received patient response message. Arrow **1364** directs execution from operation **1362** to operation **1366**. Operation **1366** performs sending the patient prescription message to the workflow engine. Arrow **1368** directs execution from operation  
30 **1366** to operation **1370**. Operation **1370** terminates the operations of this flowchart.

5 Figure **33** depicts a flowchart of further details of operation **1170** of Figure **25**.  
Arrow **1380** directs the flow of execution from starting operation **1170** to  
operation **1382**. Operation **1382** performs generating a proposed embedded  
prescription refill in the proposed patient response. Arrow **1384** directs execution  
from operation **1382** to operation **1386**. Operation **1386** terminates the  
10 operations of this flowchart.

Figure **34** depicts a flowchart of further details of operation **1222** of Figure **27**.  
Arrow **1400** directs the flow of execution from starting operation **1222** to  
operation **1402**. Operation **1402** performs reviewing the proposed embedded  
prescription refill. Arrow **1404** directs execution from operation **1402** to operation  
15 **1406**. Operation **1406** terminates the operations of this flowchart.

Figure **35** depicts a flowchart of further details of operation **1402** of Figure **34**.  
Arrow **1420** directs the flow of execution from starting operation **1402** to  
operation **1422**. Operation **1422** performs approving the proposed prescription  
refill. Arrow **1424** directs execution from operation **1422** to operation **1426**.  
20 Operation **1426** terminates the operations of this flowchart.

Arrow **1430** directs the flow of execution from starting operation **1402** to  
operation **1432**. Operation **1432** performs revising the proposed embedded  
prescription refill. Arrow **1434** directs execution from operation **1432** to operation  
**1426**. Operation **1426** terminates the operations of this flowchart.

25 Arrow **1440** directs the flow of execution from starting operation **1402** to  
operation **1442**. Operation **1442** performs deleting the proposed embedded  
prescription refill. Arrow **1444** directs execution from operation **1442** to operation  
**1426**. Operation **1426** terminates the operations of this flowchart.

Arrow **1450** directs the flow of execution from starting operation **1402** to  
30 operation **1452**. Operation **1452** performs generating a second embedded

5 prescription. Arrow **1454** directs execution from operation **1452** to operation **1426**. Operation **1426** terminates the operations of this flowchart.

Note that in certain embodiments, the starting operation may act as a branching mechanism. Such a mechanism can be driven by patient choices via a user interface, such as buttons or pull down menus being selected or pushed.

10 Figure **36** depicts a flowchart of further operations embodying the message profiler process in accordance with certain embodiments supporting billing patients. Operation **1470** starts the operations of this flowchart. Arrow **1472** directs the flow of execution from operation **1470** to operation **1474**. Operation **1474** performs generating a billing report from the patient medical profile. Arrow  
15 **1476** directs execution from operation **1474** to operation **1478**. Operation **1478** terminates the operations of this flowchart.

Figure **37** depicts a flowchart of further operations embodying the message profiler process in accordance with certain embodiments further supporting billing patients. Operation **1490** starts the operations of this flowchart. Arrow **1492**  
20 directs the flow of execution from operation **1490** to operation **1494**. Operation **1494** performs sending the billing report to the billing system. Arrow **1496** directs execution from operation **1494** to operation **1498**. Operation **1498** terminates the operations of this flowchart.

Figure **38** depicts a flowchart of further operations embodying a billing process in  
25 accordance with certain embodiments. Operation **1510** starts the operations of this flowchart. Arrow **1512** directs the flow of execution from operation **1510** to operation **1514**. Operation **1514** performs receiving the billing report for the patient. Arrow **1516** directs execution from operation **1514** to operation **1518**. Operation **1518** performs generating a bill for the patient based from the received  
30 billing report for the patient. Arrow **1520** directs execution from operation **1518** to operation **1522**. Operation **1522** terminates the operations of this flowchart. ###

5 Figure **39** depicts a flowchart of further details of operation **1518** of Figure **38**. Arrow **1540** directs the flow of execution from starting operation **1518** to operation **1542**. Operation **1542** performs generating a personal bill for the patient. Arrow **1544** directs execution from operation **1542** to operation **1546**. Operation **1546** terminates the operations of this flowchart.

10 Arrow **1550** directs the flow of execution from starting operation **1518** to operation **1552**. Operation **1552** performs generating an insurance bill for the patient to corresponding insurance provider. Arrow **1554** directs execution from operation **1552** to operation **1546**. Operation **1546** terminates the operations of this flowchart.

15 Note that a patient may not have insurance, so that in such circumstances, no insurance bills would be generated. Note also, that in certain circumstances, there may be an overall insuring, such as a governmental agency, fully paying for the health costs. In such circumstances, no personal medical bill might be generated. In certain alternative embodiments, the performing of these  
20 operations might not lead to output of one or the other kinds of medical bills.

Figure **40** depicts a flowchart of further details of operation **708** of Figure **8** supporting a physician requesting a second opinion in accordance with certain embodiments. Arrow **1570** directs the flow of execution from starting operation **704** to operation **1572**. Operation **1572** performs generating a first-physician-second opinion request message. Arrow **1574** directs execution from operation  
25 **1572** to operation **1576**. Operation **1576** performs sending the first-physician-second opinion request message to the second physician at the corresponding physician address. Arrow **1578** directs execution from operation **1576** to operation **1580**. Operation **1580** terminates the operations of this flowchart.

30 Figure **41** depicts a flowchart of operations embodied in the second message wizard supporting a second physician and a second opinion request in accordance with certain embodiments. Operation **1600** starts the operations of

5 this flowchart. Arrow **1602** directs the flow of execution from operation **1600** to operation **1604**. Operation **1604** performs receiving the first-physician-second opinion request message. Arrow **1606** directs execution from operation **1604** to operation **1608**. Operation **1608** performs processing the received, first-physician-second opinion request message to create the processed, received  
10 first-physician-second opinion request. Arrow **1610** directs execution from operation **1608** to operation **1612**. Operation **1612** performs displaying the processed, received first-physician-second-opinion request. Arrow **1614** directs execution from operation **1612** to operation **1616**. Operation **1616** performs responding to the displayed, processed, received first-physician-second opinion  
15 request to create a second opinion response. Arrow **1618** directs execution from operation **1616** to operation **1620**. Operation **1620** performs generating a second opinion message from the second opinion response. Arrow **1622** directs execution from operation **1620** to operation **1624**. Operation **1624** performs sending the second opinion message to the first-physician at the corresponding  
20 physician address. Arrow **1626** directs execution from operation **1624** to operation **1628**. Operation **1628** terminates the operations of this flowchart.

Figure **42** depicts a flowchart of operations embodied in a second message wizard supporting maintaining a collection of patient response templates in accordance with certain embodiments. Operation **1640** starts the operations of  
25 this flowchart. Arrow **1642** directs the flow of execution from operation **1640** to operation **1644**. Operation **1644** performs creating a patient response template. Arrow **1646** directs execution from operation **1644** to operation **1648**. Operation **1648** terminates the operations of this flowchart.

Arrow **1650** directs the flow of execution from starting operation **1640** to  
30 operation **1652**. Operation **1652** performs editing one of the patient response templates. Arrow **1654** directs execution from operation **1652** to operation **1648**. Operation **1648** terminates the operations of this flowchart.

5 Arrow **1660** directs the flow of execution from starting operation **1640** to operation **1662**. Operation **1662** performs deleting one of the patient response templates. Arrow **1664** directs execution from operation **1662** to operation **1648**. Operation **1648** terminates the operations of this flowchart.

Note that in certain embodiments, the starting operation may act as a branching  
10 mechanism. Such a mechanism can be driven by patient choices via a user interface, such as buttons or pull down menus being selected or pushed.

Figure **43** depicts a flowchart of further details of operation **704** of Figure **8** supporting use of a patient response template to create a first-physician response in accordance with certain embodiments. Arrow **1670** directs the flow of  
15 execution from starting operation **704** to operation **1672**. Operation **1672** performs invoking one of the patient response templates in conjunction with the processed, received patient medical query message. Arrow **1674** directs execution from operation **1672** to operation **1676**. Operation **1676** performs responding by first physician to invoked patient response template and  
20 processed, received patient medical query message to create the first-physician response. Arrow **1678** directs execution from operation **1676** to operation **1680**. Operation **1680** terminates the operations of this flowchart.

Figure **44** depicts a flowchart of operations embodied in a first messaging wizard to support maintaining a collection of patient problem templates in accordance  
25 with certain embodiments. Operation **1700** starts the operations of this flowchart. Arrow **1702** directs the flow of execution from operation **1700** to operation **1704**. Operation **1704** performs receiving the patient problem template from workflow engine. Arrow **1706** directs execution from operation **1704** to operation **1708**. Operation **1708** performs processing the received patient problem template to  
30 create a processed, received patient problem template. Arrow **1710** directs execution from operation **1708** to operation **1712**. Operation **1712** performs adding the processed, received patient problem template to the collection of



5 patient problem templates. Arrow **1714** directs execution from operation **1712** to operation **1716**. Operation **1716** terminates the operations of this flowchart.

Figure **45** depicts a flowchart of further details of operation **604** of Figure 5 supporting use of a patient problem template to create an educated medical query using a first medical wizard in accordance with certain embodiments.

10 Arrow **1730** directs the flow of execution from starting operation **604** to operation **1732**. Operation **1732** performs invoking one of the patient problem templates. Arrow **1734** directs execution from operation **1732** to operation **1736**. Operation **1736** performs responding by patient to invoked patient problem templates to create the educated query message. Arrow **1738** directs execution from  
15 operation **1736** to operation **1740**. Operation **1740** terminates the operations of this flowchart.

Figure **46** depicts a flowchart of operations embodied in a medical profiler process performed by a workflow engine to generate and send patient problem templates to patients in accordance with certain embodiments. Operation **1760**  
20 starts the operations of this flowchart. Arrow **1762** directs the flow of execution from operation **1760** to operation **1764**. Operation **1764** performs generating a patient problem template from the patient medical profile. Arrow **1766** directs execution from operation **1764** to operation **1768**. Operation **1768** performs sending the patient problem template to the patient at the corresponding patient  
25 address. Arrow **1770** directs execution from operation **1768** to operation **1772**. Operation **1772** terminates the operations of this flowchart.

Figure **47** depicts a flow diagram of a medical profiler process in accordance with certain embodiments. Box **1800** designates a Medical Profiler Process Dispatcher. This communicates via physical transport mechanism **1802** to  
30 network **1804**. Box **1808** designates Medical profiler sub-process 1 on workflow engine 1, performing the operation **630** of Figure 6. This communicates via physical transport mechanism **1806** to network **1804**. Box **1812** designates

Medical profiler sub-process 2 on workflow engine 2, performing the operation **740** of Figure **9**. This communicates via physical transport mechanism **1810** to network **1804**. Box **1816** designates Medical profiler sub-process 3 on workflow engine 3, performing the operation **1040** of Figure **21**. This communicates via physical transport mechanism **1814** to network **1804**. Box **1820** designates Medical profiler sub-process 4 on workflow engine 4, performing the operation **1270** of Figure **28**. This communicates via physical transport mechanism **1818** to network **1804**. Box **1824** designates Medical profiler sub-process 5 on workflow engine 5, performing the operation **1470** of Figure **36**. This communicates via physical transport mechanism **1822** to network **1804**. Box **1828** designates Medical profiler sub-process 6 on workflow engine 6, performing the operation **1490** of Figure **37**. This communicates via physical transport mechanism **1826** to network **1804**. Box **1832** designates Medical profiler sub-process 7 on workflow engine 7, performing the operation **1760** of Figure **46**. This communicates via physical transport mechanism **1830** to network **1804**.

Note that in certain alternative embodiments, collections of these sub-processes may preferably reside on a single workflow engine. Note that in certain other embodiments, multiple workflow engines may be performing a given sub-process.

Figure **48** depicts a flow diagram of a computer program capable of receiving a message from a physician containing a prescription and responding to the message containing the prescription in accordance with an aspect of the invention. Operation **1850** starts the operations of this flowchart. Arrow **1852** directs the flow of execution from operation **1850** to operation **1854**. Operation **1854** performs receiving the patient message with an embedded prescription. Arrow **1856** directs execution from operation **1854** to operation **1858**. Operation **1858** performs displaying the received patient message with embedded prescription. Arrow **1860** directs execution from operation **1858** to operation **1862**. Operation **1862** performs responding to the patient message with

5 embedded prescription. Arrow **1864** directs execution from operation **1862** to operation **1866**. Operation **1866** terminates the operations of this flowchart.

Figure **49** depicts a flowchart of further details of the code of **1854** of Figure **48** supporting receiving a patient message with an embedded prescription in accordance with certain embodiments. Arrow **1880** directs the flow of execution from starting operation **1854** to operation **1882**. Operation **1882** performs receiving an encrypted patient message with embedded prescription. Arrow **1884** directs execution from operation **1882** to operation **1886**. Operation **1886** performs processing the received, encrypted patient message with embedded prescription to create the received patient message with embedded prescription.

10 Arrow **1888** directs execution from operation **1886** to operation **1890**. Operation **1890** terminates the operations of this flowchart.

Figure **50** depicts a flowchart of further details of the code of **1862** of Figure **48** supporting responding to the patient response message in accordance with certain embodiments. Arrow **1900** directs the flow of execution from starting operation **1862** to operation **1902**. Operation **1902** performs generating a patient prescription message from said embedded prescription. Arrow **1904** directs execution from operation **1902** to operation **1906**. Operation **1906** performs sending said patient prescription message to said workflow engine. Arrow **1908** directs execution from operation **1906** to operation **1910**. Operation **1910** terminates the operations of this flowchart.

Figure **50A** depicts a flowchart of further details of **1311** of Figure **30** supporting integrating a prescription order in accordance with certain embodiments.

Arrow **1920** directs the flow of execution from starting operation **1311** to operation **1922**. Operation **1922** determines if the received patient response message contains an embedded prescription. Arrow **1924** directs execution from operation **1922** to operation **1926**. Arrow **1924** directs execution when the

- 5 determination is ☐Yes☐ to operation **1926**. Arrow **1954** directs execution when the determination is ☐No☐ to operation **1946**.

Operation **1926** performs receiving the patient prescription order message from the first patient. Arrow **1928** directs execution from operation **1926** to operation **1930**. Operation **1930** determines if the patient prescription order message from  
10 the first patient is compatible with the embedded prescription contained in the received patient response message. Arrow **1932** directs execution from operation **1930** to operation **1934**. Arrow **1932** directs execution when the determination is ☐Yes☐ to operation **1934**. Arrow **1956** directs execution when the determination is ☐No☐ to operation **1946**.

15 Operation **1934** determines if the patient prescription order received from the first patient authorizes the prescription order. Arrow **1936** directs execution from operation **1934** to operation **1938**. Arrow **1936** directs execution when the determination is ☐Yes☐ to operation **1938**. Arrow **1958** directs execution when the determination is ☐No☐ to operation **1946**.

20 Operation **1938** determines a first pharmacy from the patient prescription order. Arrow **1940** directs execution from operation **1938** to operation **1942**. Operation **1942** performs generates and sends the prescription order message to the first pharmacy based upon the received patient response message and the received patient prescription order message. Arrow **1944** directs execution from operation  
25 **1942** to operation **1946**. Operation **1946** terminates the operations of this flowchart.

Figure **50B** depicts a flowchart of further details of **1324** of Figure **30A** supporting generating a pharmacy prescription order in accordance with certain embodiments.

30 Arrow **1960** directs the flow of execution from starting operation **1324** to operation **1962**. Operation **1962** determines if the processed, received patient prescription order is compatible with the processed, received physician

5 prescription. Arrow **1964** directs execution when the determination is 'Yes' to operation **1966**. Arrow **1978** directs usage when the determination is 'No' to operation **1970**.

Operation **1966** generates a pharmacy prescription order message from the processed, received physician prescription message and the processed,  
10 received patient prescription order. Arrow **1968** directs execution from operation **1966** to operation **1970**. Operation **1970** terminates the operations of this flowchart.

Figure **50C** depicts a flowchart of further details of **1326** of Figure **30A** supporting sending a pharmacy prescription order to a pharmacy in accordance with certain  
15 embodiments.

Arrow **1980** directs the flow of execution from starting operation **1326** to operation **1962**. Operation **1962** determines if the processed, received patient prescription order is compatible with the processed, received physician prescription. Arrow **1984** directs execution from operation **1962** to operation  
20 **1986**. Arrow **1984** directs execution when the determination is ☐Yes☐ to operation **1986**. Arrow **1998** directs usage when the determination is ☐No☐ to operation **1994**.

Operation **1986** performs determine the first pharmacy from the processed, received patient prescription order. Arrow **1988** directs execution from operation  
25 **1986** to operation **1990**. Operation **1990** performs sending the pharmacy prescription order message to the first pharmacy. Arrow **1992** directs execution from operation **1990** to operation **1994**. Operation **1994** terminates the operations of this flowchart.

Figure **50D** depicts a flowchart of further details of **1106** of Figure **23** supporting  
30 determining a routing chain of physician extenders and embedding the routing chain into a second patient query in accordance with certain embodiments.

5 Arrow **2010** directs the flow of execution from starting operation **1106** to operation **2012**. Operation **2012** determines a routing chain of physician extenders. Arrow **2014** directs execution from operation **2012** to operation **2016**. Operation **2016** embeds the routing chain of physician extenders into the second medical query. Arrow **2018** directs execution from operation **2016** to operation  
10 **2020**. Operation **2020** terminates the operations of this flowchart.

Note that a routing chain of physician extenders is a collection of at least one physician extender to whom the second patient query will be routed after the first physician extender has added their proposed response to the patient query.

15 Figure **50E** depicts a flowchart of further details of **1178** of Figure **24** supporting determining successor physician extenders in an embedded physician extender routing chain, generating a successor medical query message with embedded proposed patient response and sending the successor patient medical query to the successor physician extender.

20 Arrow **2030** directs the flow of execution from starting operation **1178** to operation **2032**. Operation **2032** determines if there is a successor physician extender in the embedded physician extender chain. Arrow **2034** directs execution from operation **2032** to operation **2036**. Arrow **2034** directs execution when the determination is ☐Yes☐ to operation **2032**. Arrow **2048** directs execution when the determination is ☐No☐ to operation **2044**.

25 Operation **2036** generates the successor medical query message with the embedded proposed patient response. Arrow **2038** directs execution from operation **2036** to operation **2040**. Operation **2040** send the successor patient medical query to the successor physician extender. Arrow **2042** directs execution from operation **2040** to operation **2044**. Operation **2044** terminates the  
30 operations of this flowchart.

Figure **50F** depicts a flowchart of further details of **646** of Figure **6** supporting generating a routing tree of physicians with first physician final destination and

5 source list of physicians, generating and sending a source medical query to each physician included in the physician source list.

Arrow **2060** directs the flow of execution from starting operation **646** to operation **2062**. Operation **2062** performs generating a routing tree of physicians with the first physician the final destination of the routing tree and a source list of  
10 physicians of the routing tree. Arrow **2064** directs execution from operation **2062** to operation **2066**. Operation **2066** performs generating and sending a source medical query for and to each physician belonging to the source list of the routing tree. Arrow **2068** directs execution from operation **2066** to operation **2070**. Operation **2070** terminates the operations of this flowchart.

15 Additional Discussion of Primary Terms as used herein:

A service profile of a client is a collection of information residing in some computer accessible media which from time to time a computer may be able to access.

20 The service profiler process is the system-wide activities which are performed in an automated fashion by the service-flow engine to facilitate the service communication between clients, service providers, service extenders and suppliers to support at least the following: service queries, replies and transactions involved in service recommendations.

25 The service-flow engine is the mechanism performing the collection of operations known as the service profiler process. It has at least one address on the network shared with clients, service providers, service extenders and suppliers. Note that this shared network may in fact be partitioned into a collection of networks, each possessing gateways, firewalls and the like as is well known in the art. Note that the service-flow engine may include but is not limited to one computer, and in  
30 fact, in certain embodiments preferably involves more than one server computer as will be discussed later.

5 A client as used herein will have two components of meaning: The first component being the entity about whom the service profile, query messages, response message and service recommendations are directed; the second is a responsible individual acting for the client in all the transactions, such as generating the query messages, receiving and considering the response  
10 messages and ordering the service recommendations. Note that a list of the first component entities includes but is not limited to people, corporations, companies, organizations, as well as real estate, machinery including but not limited to automobiles, computer systems, web sites, software, telephones, communications networks and systems.

15 Further embodiments of the invention support the service-flow engine creating routing chains of service extenders starting with a first service extender proceeding through successor service provider extenders until the routing chain terminates with a service provider reviewing the collective proposed client response. The routing chain may be generated by the service-flow engine based  
20 upon the client's educated query message.

Further embodiments of the invention support the service-flow engine creating routing trees of service providers with patent query messages starting with a source list of service providers, possibly routing to intermediate service providers and culminating in a first service provider who reviews the collective service  
25 provider responses to their respective client service queries.

Figure **51** depicts a flow diagram of an embodiment of the invention in accordance with certain embodiments. Client **2200** is the primary initiator of this invention. Arrow **2202** depicts the interactions of client **2200** to create the educated query message **2204**. The educated query message **2204** is an  
30 optimized service query directed by the client to address concerns and conditions involving the client. Arrow **2206** depicts the sending of educated query message **2204** to the service profile **2208** which is managed by the service profiler



process. The service-flow engine performs the various service profiler process operations. More will be said about the service-flow engine shortly. Arrow **2210** depicts interactive communication between the service-flow engine **2208** and the service providers **2212** primarily regarding the service profiler. Service providers **2212** are the central destination of client generated educated service query messages as sent by **2210** from the service profiler process to the service provider **2212**. Arrow **2214** depicts the response of service provider **2212** to the educated query message, generating a consultative response **2216**. Consultation **2216** provides the basis of the client response message **2226**. Arrow **2218** depicts the inclusion of the service provider consultative response **2216** with educational material **2220**. Educational material **2220** is included in certain, but not all cases, to meet mandated regulations as well as provide the service providers a mechanism to distribute standard material regarding various conditions and treatments. Arrow **2222** depicts the service-flow engine activities required to incorporate the consultative response and included materials **2220** with billing information (charging) **2224**. Charging **2224** performs tasks of notifying a client service profile of the consultative transaction, what was the query, response, educational materials included and the service expenses. Arrow **2226** depicts the actual patent response message derived from **2224** query, service provider response, educational materials included and the service expenses sent to client **2200**.

Arrow **2230** depicts the message information flow from the service-flow engine to service extender **2232**. Service extenders **2232** perform a number of service tasks under the direction of service providers **2212**. Arrow **2234** depicts the sending of proposed client response messages generated by service extenders **2232** to a service provider **2212**. Arrow **2240** depicts another message information flow from the service-flow engine to a service assistant **2242**. While service assistants are service extenders, a service assistant **2242** performs a specific additional task distinguishing them from other service extenders, such as

5 service provider assistants and administrators. Service assistant **2242** can propose service recommendation refills for example. Arrow **2244** depicts the sending of proposed client response message, which may further include proposed embedded service recommendation refills, from service assistant **2242** to service provider **2246**.

10 Service provider **2212** performs a review on the proposed client response messages from service extenders, including service assistants, as delivered by arrows **2234** and **2244**. Template replies **2246** offer the capability for service providers to optimize the quality and efficiency of response in making many standard replies. Arrow **2248** depicts the interaction between template replies  
15 **2246** and service provider **2212**.

Arrow **2250** depicts the information and activity flow based upon the consultative response **2216** and the placing of a service recommendation message **2252**. Service recommendation message **2252** is created based upon the service provider's consultative response **2216**, which in turn is based upon the client's  
20 service query message and possibly a service assistant's proposed service recommendation refill. Arrow **2254** depicts sending a service recommendation message **2252** to ordering process **2256**. Client **2200** receives the patent response message **2226**, and may respond by ordering the embedded service recommendation, which is depicted by arrow **2264** indicating a client service  
25 recommendation message sent to ordering process **2256**. Ordering process **2256** waits until both the service provider service recommendation message **2254** and client service recommendation message **2264** have been received and processed before the order **2258** is actually placed with supplier **2260**. Supplier **2260** sends the service recommendation to client **2300** as indicated by arrow  
30 **2362**.

Figure **52** depicts an interactive flow between a client using a first message interface, service-flow engine performing a service profiler process and service

5 provider using a second message interface in accordance with an embodiment of the invention. Client **2300** interacts **2302** with client operated computer **2304**, which can access **2306** and perform the operations of first message interface **2308**. Service provider **2350** interacts **2352** with service provider operated computer **2354**, which can access **2356** and perform the operations of second message interface **2358**. Service extender **2400** interacts **2402** with service extender operated computer **2404**, which can access **2406** and perform the operations of second message interface **2408**.

Client **2300** using first message interface **2308** on client operated computer **2304** generates **2310** educated query message **2312** and sends it **2314** to service-flow engine **2320** where it is received by service profiler process **2322**. Service profiler process **2322** generates **2324** client message log entry **2326**, which is added **2328** to the client service profile **2330**. Service profiler process **2322** further generates **2340** client service query message **2342**, which is sent **2344** to service provider operated computer **2354**.

Service provider **2350** using second message interface **2358** on service provider operated computer **2354** receives and responds to the client service query message **2342**, generating **2360** a client response message **2362**, which in certain embodiments is sent **2364** directly to the client operated computer **2304**. In certain alternative embodiments, client response message **2362** is sent **2370** to the service-flow engine, where the service profiler process **2322** then sends **2372** a version to the client operated computer **2304**. Service provider **2350** using second message interface **2358** on service provider operated computer **2354** further responds to the client service query message **2342**, generating a client response message with appended service provider billing data **2382**, which is sent **2384** to the service-flow engine, where the service profiler process **2322** then generates **2390** a client response log entry **2392** which is added **2394** to the client service profile **2330**.

5 In certain situations, a service recommendation is embedded into client response message **2362** by the service provider **2350** using second message interface **2358** on service provider operated computer **2354** in response to the client service query message **2342**, which embedded into the client response message **2362**. Service provider **2350** using second message interface **2358** on service provider operated computer **2354** also generates **2480** service provider service recommendation message **2482**, which is sent **2484** to the service-flow engine using the service profiler process **2322**. Client **2300** using first message interface **2308** on client operated computer **2304** generates **2490** client order message **2492** and sends it **2494** to service-flow engine **2320** where it is received by service profiler process **2322**. Once both service provider service recommendation message **2482** and client order message **2492** have been received and authenticated, the medial profiler process **2322** generates **2500** a supplier service order message **2502** which is sent **2504** to the supplier computer **2506**.

20 Service profiler process **2322** accesses **2510** the client service profile **2330** to generate **2512** client billing report message **2514** which is sent **2516** to billing system **2518**. Note that the billing system **2518** in certain embodiments is a separate system element external to the service-flow engine. In certain alternative embodiments, billing system **2518** resides within the operations performed by the service-flow engine. In certain further embodiments, billing system **2518** is part of the service profiler process.

Note that in the flowcharts included herein, the starting operation of a flowchart may perform operations to allocate systems resources for use by the subsequent operations of the flowchart in certain embodiments. The starting operation of a flowchart may further perform initialize systems resources in certain embodiments.

Note also that in the flowcharts included herein, the terminating or exit operation of a flowchart may perform operations to release allocated systems resources used by the subsequent operations of the flowchart in certain embodiments. The terminating operation of a flowchart may further perform a “return” operation in certain embodiments. Alternatively, the terminating operation of a flowchart may not perform a “return” operation in certain embodiments.

Figure **52A** depicts an interactive flow between a client using a first message interface, service-flow engine performing a service profiler process and service provider using a second message interface in accordance with a further embodiment of the invention. Client **2300** interacts **2302** with client operated computer **2304**, which can access **2306** and perform the operations of first message interface **2308**. Service provider **2350** interacts **2352** with service provider operated computer **2354**, which can access **2356** and perform the operations of second message interface **2358**. Service extender **2400** interacts **2402** with service extender operated computer **2404**, which can access **2406** and perform the operations of second message interface **2408**.

Client **2300** using first message interface **2308** on client operated computer **2304** generates **2310** educated query message **2312** and sends it **2314** to service-flow engine **2320** where it is received by service profiler process **2322**. Service profiler process **2322** generates **2324** client message log entry **2326**, which is added **2328** to the client service profile **2330**. Service profiler process **2322** further generates **2340** client service query message **2342**, which is sent **2344** to service provider operated computer **2354**.

Service provider **2350** using second message interface **2358** on service provider operated computer **2354** receives and responds to the client service query message **2342**, generating **2360** a client response message **2362**, which in certain embodiments is sent **2364** directly to the client operated computer **2304**. In certain alternative embodiments, client response message **2362** is sent **2370**

5 to the service-flow engine, where the service profiler process **2322** then sends **2372** a version to the client operated computer **2304**. Service provider **2350** using second message interface **2358** on service provider operated computer **2354** further responds to the client service query message **2342**, generating a client response message with appended service provider billing data **2382**, which  
10 is sent **2384** to to the service-flow engine, where the service profiler process **2322** then generates **2390** a client response log entry **2392** which is added **2394** to the client service profile **2330**.

In certain situations, a service recommendation is embedded into client response message **2362** by the service provider **2350** using second message interface  
15 **2358** on service provider operated computer **2354** in response to the client service query message **2342**, which embedded into the client response message **2362**. Service provider **2350** using second message interface **2358** on service provider operated computer **2354** also generates **2480** service provider service recommendation message **2482**, which is sent **2484** to the service-flow engine  
20 using the service profiler process **2322**. Client **2300** using first message interface **2308** on client operated computer **2304** generates **2490** client order message **2492** and sends it **2494** to service-flow engine **2320** where it is received by service profiler process **2322**. Once both service provider service recommendation message **2482** and client order message **2492** have been  
25 received and authenticated, the medial profiler process **2322** generates **2500** a supplier service order message **2502** which is sent **2504** to the supplier computer **2506**.

Service profiler process **2322** accesses **2510** the client service profile **2330** to generate **2512** client billing report message **2514** which is sent **2516** to billing  
30 system **2518**. Note that the billing system **2518** in certain embodiments is a separate system element external to the service-flow engine. In certain alternative embodiments, billing system **2518** resides within the operations

5 performed by the service-flow engine. In certain further embodiments, billing system **2518** is part of the service profiler process.

Service profiler process **2322** further generates **2400** a second client service query message **2402**, which is sent **2404** to service extender operated computer **2414**. Service extender **2410** using third message interface **2418** on service  
10 provider operated computer **2414** receives and responds to the second client service query message **2412**, generating **2430** a proposed client response message **2432**, which is sent **2434** directly to the service provider operated computer **2354**, where it is inserted into the client service query message **2342**. In certain alternative embodiments, client response message **2432** is sent **2436**  
15 to the service-flow engine, where the service profiler process **2322** then sends a version to the service provider operated computer **2354**. Service extender **2410** using third message interface **2418** on service provider operated computer **2414** further responds **2440** to the second client service query message **2402**, generating a proposed client response message with appended service extender  
20 billing data **2442**, which is sent **2444** to the service-flow engine, where the service profiler process **2322** then generates **2450** a proposed client response with appended service extender billing data log entry **2452** which is added **2454** to the client service profile **2330**.

Figure **53** depicts a flowchart of operations supporting the generation and  
25 sending of an educated query by a client using the first message interface in accordance with embodiments supporting Figure **52**. Operation **2600** starts the operations of this flowchart. Arrow **2602** directs the flow of execution from operation **2600** to operation **2604**. Operation **2604** performs generating of an educated query message. Arrow **2606** directs execution from operation **2604** to  
30 operation **2608**. Operation **2608** performs sending the educated query message to the service-flow engine. Arrow **2610** directs execution from operation **2608** to operation **2612**. Operation **2612** terminates the operations of this flowchart.

Figure **54** depicts a flowchart of operations supporting the reception, processing, logging of the educated query message from the client, and the generation and sending of the client service query message to a service provider by the service profiler process performed by the service-flow engine in accordance with embodiments supporting Figure **52**. Operation **2630** starts the operations of this flowchart. Arrow **2632** directs the flow of execution from operation **2630** to operation **2634**. Operation **2634** performs receiving the educated query message at the service-flow engine. Arrow **2636** directs execution from operation **2634** to operation **2638**. Operation **2638** performs processing the received educated query message to create the processed, received educated query message. Arrow **2640** directs execution from operation **2638** to operation **2642**. Operation **2642** performs generating a client service query message. Arrow **2644** directs execution from operation **2642** to operation **2646**. Operation **2646** performs sending the client service query message to first service provider at corresponding service provider address. Arrow **2648** directs execution from operation **2646** to operation **2650**. Operation **2650** terminates the operations of this flowchart.

In certain embodiments, operation **646** further includes selecting a first service provider. In certain further embodiments, operation **646** further includes selecting a first service provider based upon the received educated query message. In certain further embodiments, operation **646** further includes selecting a first service provider based upon the processed, received educated query message.

Arrow **2652** directs the flow of execution from starting operation **2638** to operation **2654**. Operation **2654** performs generating a client message log entry in the client service profile. Arrow **2656** directs execution from operation **2654** to operation **2650**.



5 Figure 55 depicts a flowchart of operations supporting reception, processing and viewing the client service query message by the second message interface for the service provider in accordance with embodiments supporting Figure 52. Operation 2670 starts the operations of this flowchart. Arrow 2672 directs the flow of execution from operation 2670 to operation 2674. Operation 2674  
10 performs receiving the client query message. Arrow 2676 directs execution from operation 2674 to operation 2678. Operation 2678 performs processing the received client service query message to create the processed, received client service message. Arrow 2680 directs execution from operation 2678 to operation 2682. Operation 2682 performs generating a service-provider-viewable client service query message from the processed, received client  
15 service query message. Arrow 2684 directs execution from operation 2682 to operation 2686. Operation 2686 performs displaying the service-provider-viewable client service query message. Arrow 2688 directs execution from operation 2686 to operation 2690. Operation 2690 terminates the operations of  
20 this flowchart.

Figure 56 depicts a flowchart of operations supporting reception, generation and sending a client response message, as well as copying the client response message with an appended service provider billing data to the service-flow engine in accordance with embodiments supporting Figure 52. Operation 2700  
25 starts the operations of this flowchart. Arrow 2702 directs the flow of execution from operation 2700 to operation 2704. Operation 2704 performs responding to the service-provider-viewable client service query message to create a first-service-provider response. Arrow 2706 directs execution from operation 2704 to operation 2708. Operation 2708 performs generating a client response message  
30 from the first-service-provider response. Arrow 2710 directs execution from operation 2708 to operation 2712. Operation 2712 performs sending the client response message to the client at the corresponding client address. Arrow 2714

5 directs execution from operation **2712** to operation **2716**. Operation **2716** terminates the operations of this flowchart.

Arrow **2720** directs the flow of execution from starting operation **2708** to operation **2722**. Operation **2722** performs copying the client response message with appended service provider billing data to service-flow engine. Arrow **2724**  
10 directs execution from operation **2722** to operation **2716**.

Figure **57** depicts a flowchart of operations supporting the reception, processing, logging the copied client response message with an appended service provider billing data by the service profiler process performed by the service-flow engine in accordance with embodiments supporting Figure **52**. Operation **2740** starts the operations of this flowchart. Arrow **2742** directs the flow of execution from  
15 operation **2740** to operation **2744**. Operation **2744** performs receiving the copied client response message with appended service provider billing data. Arrow **2746** directs execution from operation **2744** to operation **2748**. Operation **2748** performs processing the received, copied client response message with  
20 appended service provider billing data to create the processed, received, copied client response message with appended service provider billing data. Arrow **2750** directs execution from operation **2748** to operation **2752**. Operation **2752** performs generating a client response log entry in client service profile from the  
25 processed, received, copied client response message with appended service provider billing data. Arrow **2754** directs execution from operation **2752** to operation **2756**. Operation **2756** terminates the operations of this flowchart.

Figure **58** depicts a flowchart of operations supporting reception, processing and display of the client response message using the first message interface on the client operated computer in accordance with embodiments supporting Figure **52**.

30 Operation **2770** starts the operations of this flowchart. Arrow **2772** directs the flow of execution from operation **2770** to operation **2774**. Operation **2774** performs receiving the client response message. Arrow **2776** directs execution

5 from operation **2774** to operation **2778**. Operation **2778** performs processing the received client response message, to create a processed, received client response message. Arrow **2780** directs execution from operation **2778** to operation **2782**. Operation **2782** performs displaying the processed, received client response message. Arrow **2784** directs execution from operation **2782** to  
10 operation **2786**. Operation **2786** terminates the operations of this flowchart.

Figure **59** depicts a flowchart of further details regarding operation **2604**, generation of an educated query message by the first message interface in accordance with embodiments supporting Figure **53**. Arrow **2800** directs the flow of execution from starting operation **2604** to operation **2802**. Operation **2802**  
15 performs providing a client-to-profiler authentication key. Arrow **2804** directs execution from operation **2802** to operation **2806**. Operation **2806** performs encrypting the educated query message with client-to-profiler authentication key. Arrow **2808** directs execution from operation **2806** to operation **2810**. Operation **2810** terminates the operations of this flowchart.

20 Figure **60** depicts a flowchart of further details regarding operation **2638**, processing the educated query message using the service profiler process performed by the service-flow engine in accordance with embodiments supporting Figure **54**. Arrow **2820** directs the flow of execution from starting operation **2638** to operation **2822**. Operation **2822** performs providing a profiler-from-client authentication key. Arrow **2824** directs execution from operation **2822**  
25 to operation **2826**. Operation **2826** performs decrypting the received, educated query message with profiler-from-client authentication key. Arrow **2828** directs execution from operation **2826** to operation **2830**. Operation **2830** terminates the operations of this flowchart.

30 Figure **61** depicts a flowchart of further details regarding operation **2642**, generation of a client service query message by the service profiler process performed by the service-flow engine in accordance with embodiments

5 supporting Figure 54. Arrow **2850** directs the flow of execution from starting operation **2642** to operation **2852**. Operation **2852** performs providing profiler-from-first-service-provider authentication key. Arrow **2854** directs execution from operation **2852** to operation **2856**. Operation **2856** performs encrypting client service query message with profiler-from-first-service-provider authentication  
10 key. Arrow **2858** directs execution from operation **2856** to operation **2860**. Operation **2860** terminates the operations of this flowchart.

Figure 62 depicts a flowchart of further details regarding operation **2678**, processing the received client service query message by the second message interface in accordance with embodiments supporting Figure 55. Arrow **2880**  
15 directs the flow of execution from starting operation **2678** to operation **2882**. Operation **2882** performs providing a first-service-provider-from-profiler authentication key. Arrow **2884** directs execution from operation **2882** to operation **2886**. Operation **2886** performs decrypting the received client service query message with the first-service-provider-from-profiler authentication key.  
20 Arrow **2888** directs execution from operation **2886** to operation **2890**. Operation **2890** terminates the operations of this flowchart.

Figure 63 depicts a flowchart of further details regarding operation **2722**, copying the client response message with appended service provider billing data to the service-flow engine by the second message interface in accordance with  
25 embodiments supporting Figure 56. Arrow **2900** directs the flow of execution from starting operation **2722** to operation **2902**. Operation **2902** performs providing a first-service-provider-to-profiler authentication key. Arrow **2904** directs execution from operation **2902** to operation **2906**. Operation **2906** performs encrypting the client response message with appended service provider billing data with the first-service-provider-to-profiler authentication key. Arrow  
30 **2908** directs execution from operation **2906** to operation **2910**. Operation **2910** performs sending first-service-provider-to-profiler encrypted client response message with appended service provider billing data to the service-flow engine.

- 5 Arrow **2912** directs execution from operation **2910** to operation **2914**. Operation **2914** terminates the operations of this flowchart.

Figure **64** depicts a flowchart of further details regarding operation **2748**, processing the received, copied the client response message with appended service provider billing data using the service profiler process performed by the service-flow engine in accordance with embodiments supporting Figure **57**.  
10 Arrow **2930** directs the flow of execution from starting operation **2748** to operation **2932**. Operation **2932** performs providing a profiler-from-first-service-provider authentication key. Arrow **2934** directs execution from operation **2932** to operation **2936**. Operation **2936** performs decrypting the received, copied  
15 client response message with appended service provider billing data with the profiler-from-first service provider authentication key to create the processed, received client response message with appended service provider billing data. Arrow **2938** directs execution from operation **2936** to operation **2940**. Operation **2940** terminates the operations of this flowchart.

20 Figure **65** depicts a flowchart of further details regarding operation **2708**, generating client response message using the second message interface in accordance with embodiments supporting Figure **56**. Arrow **2950** directs the flow of execution from starting operation **2708** to operation **2952**. Operation **2952** performs providing first-service-provider-to-client authentication key. Arrow **2954**  
25 directs execution from operation **2952** to operation **2956**. Operation **2956** performs generating an unencrypted client response message from the service-provider-viewable client service query message and the first-service-provider response. Arrow **2958** directs execution from operation **2956** to operation **2960**. Operation **2960** performs encrypt the unencrypted client response message with  
30 the first-service-provider-to-client authentication key to create the client response message. Arrow **2962** directs execution from operation **2960** to operation **2964**. Operation **2964** terminates the operations of this flowchart.

- 5 Note that operations **2952** and **2956** may be performed either in the order presented by this flowchart, or in certain alternative embodiments, in the reverse order to that shown, or further alternatively, concurrently with each other.

Figure **66** depicts a flowchart of further details regarding operation **2778**, processing the received client response message using the first message  
10 interface in accordance with embodiments supporting Figure **58**. Arrow **2980** directs the flow of execution from starting operation **2778** to operation **2982**. Operation **2982** performs providing a client-from-first-service-provider authentication key. Arrow **2984** directs execution from operation **2982** to operation **2986**. Operation **2986** performs decrypting the received client  
15 response message with the client-from-first-service-provider authentication key to create the processed, received client response message. Arrow **2988** directs execution from operation **2986** to operation **2990**. Operation **2990** terminates the operations of this flowchart.

Figure **67** depicts a flowchart of further details regarding operation **2712**, sending  
20 the client response message with appended service provider billing data using the service profiler process performed by the service-flow engine in accordance with embodiments supporting Figure **56**. Arrow **3000** directs the flow of execution from starting operation **2712** to operation **3002**. Operation **3002** performs sending client response message destined to client to service-flow engine.  
25 Arrow **3004** directs execution from operation **3002** to operation **3006**. Operation **3006** terminates the operations of this flowchart.

Figure **68** depicts a flowchart of further details regarding operation **2708**, generating the client response message using the second message interface in accordance with embodiments supporting Figure **56**. Arrow **3010** directs the flow  
30 of execution from starting operation **2708** to operation **3012**. Operation **3012** performs providing the first-service-provider-to-profiler authentication code. Arrow **3014** directs execution from operation **3012** to operation **3016**. Operation

5    **3016** performs providing the client address as destination address within the client response message, to create an unencrypted client response message with client address destination. Arrow **3018** directs execution from operation **3016** to operation **3020**. Operation **3020** performs encrypting the unencrypted client response message with the first-service-provider-to-profiler authentication  
10    code to create the client response message destined for the client at the corresponding client address. Arrow **3022** directs execution from operation **3020** to operation **3024**. Operation **3024** terminates the operations of this flowchart.

Note that operations **3012** and **3016** in certain alternative embodiments may be performed in reverse order, and in certain further alternative embodiments, may  
15    be concurrently performed.

Figure **69** depicts a flowchart of operations of the service profiler process performed by the service-flow engine in accordance with alternative embodiments supporting Figure **52**. Operation **3040** starts the operations of this flowchart. Arrow **3042** directs the flow of execution from operation **3040** to  
20    operation **3044**. Operation **3044** performs receiving the client response message destined for the client at the corresponding client address. Arrow **3046** directs execution from operation **3044** to operation **3048**. Operation **3048** performs processing the received client response message destined for the client at the corresponding client address, to create the client response message for the client  
25    at the corresponding client address. Arrow **3050** directs execution from operation **3048** to operation **3052**. Operation **3052** performs sending the client response message to the client at the corresponding client address. Arrow **3054** directs execution from operation **3052** to operation **3056**. Operation **3056** terminates the operations of this flowchart.

30    Figure **70** depicts a flowchart of further details regarding operation **3048**, processing the client response message destined for the client using the service profiler process performed by the service-flow engine in accordance with

embodiments supporting Figure 69. Arrow **3070** directs the flow of execution from starting operation **3048** to operation **3072**. Operation **3072** performs providing a profiler-from-first-service-provider authentication key. Arrow **3074** directs execution from operation **3072** to operation **3076**. Operation **3076** performs decrypting the received client response message destined for the client at the corresponding client address to create the processed, received client response message for the client at the corresponding client address. Arrow **3078** directs execution from operation **3076** to operation **3080**. Operation **3080** terminates the operations of this flowchart.

Figure 71 depicts a flowchart of further details regarding operation **2642**, generating a client service query message using the service profiler process performed by the service-flow engine in accordance with embodiments. Arrow **3100** directs the flow of execution from starting operation **2642** to operation **3102**. Operation **3102** performs selecting a first service extender from the service extenders. Arrow **3104** directs execution from operation **3102** to operation **3106**. Operation **3106** performs generating a second client service query message for the first service extender. Arrow **3108** directs execution from operation **3106** to operation **3110**. Operation **3110** performs sending the second client service query message to the first service extender at the corresponding service extender address. Arrow **3112** directs execution from operation **3110** to operation **3114**. Operation **3114** terminates the operations of this flowchart.

Note that in certain embodiments, operation **3102** is based upon the received educated query message. In certain further embodiments, operation **3102** is based upon the processed, received educated query message.

Figure 72 depicts a flowchart of operations using the third message interface on the service extender computer in accordance with embodiments supporting Figure 57. Operation **3150** starts the operations of this flowchart. Arrow **3152** directs the flow of execution from operation **3150** to operation **3154**. Operation



5     **3154** performs receiving a second client message by first service extender  
operating a computer at the corresponding service extender address. Arrow  
**3156** directs execution from operation **3154** to operation **3158**. Operation **3158**  
performs processing the received second client service query message to create  
a processed, received second client service query message. Arrow **3160** directs  
10    execution from operation **3158** to operation **3162**. Operation **3162** performs  
generating a service extender-viewable client service query message from the  
processed, received second client service query message. Arrow **3164** directs  
execution from operation **3162** to operation **3166**. Operation **3166** performs  
displaying the service extender-viewable service query message. Arrow **3168**  
15    directs execution from operation **3166** to operation **3170**. Operation **3170**  
performs responding to the service extender-viewable service query message to  
create a service extender response. Arrow **3172** directs execution from  
operation **3170** to operation **3174**. Operation **3174** performs generating the  
proposed client response message from service extender response. Arrow **3176**  
20    directs execution from operation **3174** to operation **3178**. Operation **3178**  
performs sending the proposed client response message to the first service  
provider at the corresponding service provider address. Arrow **3180** directs  
execution from operation **3178** to operation **3182**. Operation **3182** terminates the  
operations of this flowchart.

25    Figure **73** depicts a flowchart of further details regarding operation **2682**,  
generating the service-provider-viewable client service query message in  
accordance with embodiments supporting Figures **55**. Arrow **3200** directs the  
flow of execution from starting operation **2682** to operation **3202**. Operation  
**3202** performs receiving proposed client response message from first service  
30    extender. Arrow **3204** directs execution from operation **3202** to operation **3206**.  
Operation **3206** performs processing the received client response message to  
create processed, received client response message. Arrow **3208** directs  
execution from operation **3206** to operation **3210**. Operation **3210** performs

5 inserting the processed, received proposed client response message as part of the service-provider-viewable client service query message. Arrow **3212** directs execution from operation **3210** to operation **3214**. Operation **3214** terminates the operations of this flowchart.

Figure **74** depicts a flowchart of further details regarding operation **2708**,  
10 generating the client response message using the second message interface in accordance with certain embodiments. Arrow **3220** directs the flow of execution from starting operation **2708** to operation **3222**. Operation **3222** performs reviewing the proposed client response message. Arrow **3224** directs execution from operation **3222** to operation **3226**. Operation **3226** terminates the  
15 operations of this flowchart.

Figure **75** depicts a flowchart of further operations embodying the third message interface in accordance with certain embodiments. Arrow **3240** directs the flow of execution from starting operation **3240** to operation **3242**. Operation **3242** performs generating a copied proposed client response message with appended  
20 service extender billing data from the service extender-viewable client service query message and first service extender response. Arrow **3244** directs execution from operation **3242** to operation **3246**. Operation **3246** performs sending copied proposed client response with appended service extender billing data to service-flow engine. Arrow **3248** directs execution from operation **3246** to  
25 operation **3250**. Operation **3250** terminates the operations of this flowchart.

Figure **76** depicts a flowchart of further operations embodied in the message profiler process in accordance with certain embodiments. Operation **3270** starts the operations of this flowchart. Arrow **3272** directs the flow of execution from operation **3270** to operation **3274**. Operation **3274** performs receiving the copied  
30 proposed client response message with the appended service extender billing data. Arrow **3276** directs execution from operation **3274** to operation **3278**. Operation **3278** performs processing the received copied proposed client

5 response message with the appended service extender billing data, to create a  
processed, received copied proposed client response message with the  
appended service extender billing data. Arrow **3280** directs execution from  
operation **3278** to operation **3282**. Operation **3282** performs generating a service  
extender log entry in the service profile of the client from the processed, received  
10 copied client response message with the appended service extender billing data.  
Arrow **3284** directs execution from operation **3282** to operation **3286**. Operation  
**3286** terminates the operations of this flowchart.

Figure **77** depicts a flowchart of further operations embodied in a second  
message interface in accordance with certain embodiments supporting service  
15 recommendations. Operation **3290** starts the operations of this flowchart. Arrow  
**3291** directs the flow of execution from operation **3290** to operation **3292**.  
Operation **3292** performs generating an embedded service recommendation.  
Arrow **3293** directs execution from operation **3292** to operation **3294**. Operation  
**3294** performs inserting the embedded service recommendation into client  
20 response message. Arrow **3295** directs execution from operation **3294** to  
operation **3296**. Operation **3296** performs generating a service provider service  
recommendation message from the embedded service recommendation. Arrow  
**3297** directs execution from operation **3296** to operation **3298**. Operation **3298**  
performs sending the service provider service recommendation message to the  
25 service-flow engine. Arrow **3299** directs execution from operation **3298** to  
operation **3300**. Operation **3300** terminates the operations of this flowchart.

Figure **78** depicts a flowchart of further operations embodied in a service profiler  
in accordance with certain embodiments supporting service recommendations.  
Operation **3305** starts the operations of this flowchart. Arrow **3306** directs the  
30 flow of execution from operation **3305** to operation **3307**. Operation **3307**  
performs maintaining a list of suppliers, each with a corresponding supplier  
address. Arrow **3308** directs execution from operation **3307** to operation **3309**.  
Operation **3309** terminates the operations of this flowchart.

5 Arrow **3310** directs the flow of execution from starting operation **3305** to operation **3311**. Operation **3311** performs integrating a service order. Arrow **3312** directs execution from operation **3311** to operation **3309**. Operation **3309** terminates the operations of this flowchart.

Note that arrows **3306** and **3310** may be concurrently active, the supplier list may  
10 be undergoing maintenance operations and the integration of service orders may be performed concurrently on either the same computer or distinct computers according to various embodiments of the invention.

Figure **78A** depicts a flowchart of further details regarding operation **3311**, integrating a service order in the service profiler process in accordance with  
15 embodiments supporting Figure **78**. Arrow **3315** directs the flow of execution from the starting of operation **3311** to operation **3316**. Operation **3316** performs receiving the service provider service recommendation message. Arrow **3317** directs execution from operation **3316** to operation **3318**. Operation **3318** performs processing the received service provider service recommendation  
20 message, to create a processed, received service provider service recommendation message.

Arrow **3319** directs execution from operation **3311** to operation **3320**. Operation **3320** performs receiving a client order message. Arrow **3321** directs execution from operation **3320** to operation **3322**. Operation **3322** performs processing the  
25 received client order message to create a processed, received client order message.

Arrow **3323** directs execution from operation **3322** to operation **3324**. Arrow **3330** directs execution from operation **3318** to operation **3324**. Note that in certain embodiments, both arrows **3323** and **3330** must perform their flow of execution  
30 before operation **3324** can execute. Operation **3324** performs generating a supplier service order message from the processed, received service provider service recommendation message and the processed, received client order

5 message. Arrow **3325** directs execution from operation **3324** to operation **3326**. Operation **3326** performs sending the supplier service order message to one of the suppliers at the corresponding supplier address. Arrow **3327** directs execution from operation **3326** to operation **3328**. Operation **3328** terminates the operations of this flowchart.

10 Figure **79** depicts a flowchart of further operations embodied in the first message interface in accordance with certain embodiments supporting service recommendations. Operation **3340** starts the operations of this flowchart. Arrow **3342** directs the flow of execution from operation **3340** to operation **3344**. Operation **3344** performs responding to the embedded service recommendation  
15 within the processed, received client response message. Arrow **3346** directs execution from operation **3344** to operation **3348**. Operation **3348** terminates the operations of this flowchart.

Arrow **3350** directs the flow of execution from starting operation **3340** to operation **3352**. Operation **3352** performs ordering the embedded service  
20 recommendation from the processed, received client response message. Arrow **3354** directs execution from operation **3352** to operation **3348**. Operation **3348** terminates the operations of this flowchart.

Note that in certain embodiments, the starting operation may act as a branching mechanism. Such a mechanism can be driven by client choices via a user  
25 interface, such as buttons or pull down menus being selected or pushed.

Figure **80** depicts a flowchart of further details of operation **3352**, ordering the embedded service recommendation of Figure **79**. Arrow **3360** directs the flow of execution from starting operation **3352** to operation **3362**. Operation **3362** performs generating a client service recommendation message from the  
30 processed, received client response message. Arrow **3364** directs execution from operation **3362** to operation **3366**. Operation **3366** performs sending the client service recommendation message to the service-flow engine. Arrow **3368**

5 directs execution from operation **3366** to operation **3370**. Operation **3370** terminates the operations of this flowchart.

Figure **81** depicts a flowchart of further details of operation **3170** of Figure **73**. Arrow **3380** directs the flow of execution from starting operation **3170** to operation **3382**. Operation **3382** performs generating a proposed embedded  
10 service recommendation refill in the proposed client response. Arrow **3384** directs execution from operation **3382** to operation **3386**. Operation **3386** terminates the operations of this flowchart.

Figure **82** depicts a flowchart of further details of operation **3222** of Figure **75**. Arrow **3400** directs the flow of execution from starting operation **3222** to  
15 operation **3402**. Operation **3402** performs reviewing the proposed embedded service recommendation refill. Arrow **3404** directs execution from operation **3402** to operation **3406**. Operation **3406** terminates the operations of this flowchart.

Figure **83** depicts a flowchart of further details of operation **3402** of Figure **82**. Arrow **3420** directs the flow of execution from starting operation **3402** to  
20 operation **3422**. Operation **3422** performs approving the proposed service recommendation refill. Arrow **3424** directs execution from operation **3422** to operation **3426**. Operation **3426** terminates the operations of this flowchart.

Arrow **3430** directs the flow of execution from starting operation **3402** to operation **3432**. Operation **3432** performs revising the proposed embedded  
25 service recommendation refill. Arrow **3434** directs execution from operation **3432** to operation **3426**. Operation **3426** terminates the operations of this flowchart.

Arrow **3440** directs the flow of execution from starting operation **3402** to operation **3442**. Operation **3442** performs deleting the proposed embedded  
30 service recommendation refill. Arrow **3444** directs execution from operation **3442** to operation **3426**. Operation **3426** terminates the operations of this flowchart.

5 Arrow **3450** directs the flow of execution from starting operation **3402** to operation **3452**. Operation **3452** performs generating a second embedded service recommendation. Arrow **3454** directs execution from operation **3452** to operation **3426**. Operation **3426** terminates the operations of this flowchart.

Note that in certain embodiments, the starting operation may act as a branching  
10 mechanism. Such a mechanism can be driven by client choices via a user interface, such as buttons or pull down menus being selected or pushed.

Figure **84** depicts a flowchart of further operations embodying the message profiler process in accordance with certain embodiments supporting billing  
15 clients. Operation **3470** starts the operations of this flowchart. Arrow **3472** directs the flow of execution from operation **3470** to operation **3474**. Operation **3474** performs generating a billing report from the client service profile. Arrow **3476** directs execution from operation **3474** to operation **3478**. Operation **3478** terminates the operations of this flowchart.

Figure **85** depicts a flowchart of further operations embodying the message profiler process in accordance with certain embodiments further supporting billing  
20 clients. Operation **3490** starts the operations of this flowchart. Arrow **3492** directs the flow of execution from operation **3490** to operation **3494**. Operation **3494** performs sending the billing report to the billing system. Arrow **3496** directs execution from operation **3494** to operation **3498**. Operation **3498** terminates the  
25 operations of this flowchart.

Figure **86** depicts a flowchart of further operations embodying a billing process in accordance with certain embodiments. Operation **3510** starts the operations of this flowchart. Arrow **3512** directs the flow of execution from operation **3510** to operation **3514**. Operation **3514** performs receiving the billing report for the  
30 client. Arrow **3516** directs execution from operation **3514** to operation **3518**. Operation **3518** performs generating a bill for the client based from the received

5 billing report for the client. Arrow **3520** directs execution from operation **3518** to operation **3522**. Operation **3522** terminates the operations of this flowchart.

Figure **87** depicts a flowchart of further details of operation **3518** of Figure **86**. Arrow **3540** directs the flow of execution from starting operation **3518** to operation **3542**. Operation **3542** performs generating a personal bill for the client. Arrow **3544** directs execution from operation **3542** to operation **3546**. Operation **3546** terminates the operations of this flowchart.

Arrow **3550** directs the flow of execution from starting operation **3518** to operation **3552**. Operation **3552** performs generating an insurance bill for the client to corresponding insurance provider. Arrow **3554** directs execution from operation **3552** to operation **3546**. Operation **3546** terminates the operations of this flowchart.

Note that a client may not have insurance, so that in such circumstances, no insurance bills would be generated. Note also, that in certain circumstances, there may be an overall insuring, such as a governmental agency, fully paying for the health costs. In such circumstances, no personal service bill might be generated. In certain alternative embodiments, the performing of these operations might not lead to output of one or the other kinds of service bills.

Figure **88** depicts a flowchart of further details of operation **2704** of Figure **56** supporting a service provider requesting a second opinion in accordance with certain embodiments. Arrow **3570** directs the flow of execution from starting operation **2704** to operation **3572**. Operation **3572** performs generating a first-service-provider-second opinion request message. Arrow **3574** directs execution from operation **3572** to operation **3576**. Operation **3576** performs sending the first-service-provider-second opinion request message to the second service provider at the corresponding service provider address. Arrow **3578** directs execution from operation **3576** to operation **3580**. Operation **3580** terminates the operations of this flowchart.



5 Figure **89** depicts a flowchart of operations embodied in the second message interface supporting a second service provider and a second opinion request in accordance with certain embodiments. Operation **3600** starts the operations of this flowchart. Arrow **3602** directs the flow of execution from operation **3600** to operation **3604**. Operation **3604** performs receiving the first-service-provider-second opinion request message. Arrow **3606** directs execution from operation **3604** to operation **3608**. Operation **3608** performs processing the received, first-service-provider-second opinion request message to create the processed, received first-service-provider-second opinion request. Arrow **3610** directs execution from operation **3608** to operation **3612**. Operation **3612** performs displaying the processed, received first-service-provider-second-opinion request. Arrow **3614** directs execution from operation **3612** to operation **3616**. Operation **3616** performs responding to the displayed, processed, received first-service-provider-second opinion request to create a second opinion response. Arrow **3618** directs execution from operation **3616** to operation **3620**. Operation **3620** performs generating a second opinion message from the second opinion response. Arrow **3622** directs execution from operation **3620** to operation **3624**. Operation **3624** performs sending the second opinion message to the first-service-provider at the corresponding service provider address. Arrow **3626** directs execution from operation **3624** to operation **3628**. Operation **3628** terminates the operations of this flowchart.

Figure **90** depicts a flowchart of operations embodied in a second message interface supporting maintaining a collection of client response templates in accordance with certain embodiments. Operation **3640** starts the operations of this flowchart. Arrow **3642** directs the flow of execution from operation **3640** to operation **3644**. Operation **3644** performs creating a client response template. Arrow **3646** directs execution from operation **3644** to operation **3648**. Operation **3648** terminates the operations of this flowchart.

5 Arrow **3650** directs the flow of execution from starting operation **3640** to operation **3652**. Operation **3652** performs editing one of the client response templates. Arrow **3654** directs execution from operation **3652** to operation **3648**. Operation **3648** terminates the operations of this flowchart.

Arrow **3660** directs the flow of execution from starting operation **3640** to  
10 operation **3662**. Operation **3662** performs deleting one of the client response templates. Arrow **3664** directs execution from operation **3662** to operation **3648**. Operation **3648** terminates the operations of this flowchart.

Note that in certain embodiments, the starting operation may act as a branching  
mechanism. Such a mechanism can be driven by client choices via a user  
15 interface, such as buttons or pull down menus being selected or pushed.

Figure **91** depicts a flowchart of further details of operation **2704** of Figure **56**  
supporting use of a client response template to create a first-service-provider  
response in accordance with certain embodiments. Arrow **3670** directs the flow of  
execution from starting operation **2704** to operation **3672**. Operation **3672**  
20 performs invoking one of the client response templates in conjunction with the  
processed, received client service query message. Arrow **3674** directs execution  
from operation **3672** to operation **3676**. Operation **3676** performs responding by  
first service provider to invoked client response template and processed,  
received client service query message to create the first-service-provider  
25 response. Arrow **3678** directs execution from operation **3676** to operation **3680**.  
Operation **3680** terminates the operations of this flowchart.

Figure **92** depicts a flowchart of operations embodied in a first message interface  
to support maintaining a collection of client problem templates in accordance with  
certain embodiments. Operation **3700** starts the operations of this flowchart.  
30 Arrow **3702** directs the flow of execution from operation **3700** to operation **3704**.  
Operation **3704** performs receiving the client problem template from service-flow  
engine. Arrow **3706** directs execution from operation **3704** to operation **3708**.

- 5 Operation **3708** performs processing the received client problem template to create a processed, received client problem template. Arrow **3710** directs execution from operation **3708** to operation **3712**. Operation **3712** performs adding the processed, received client problem template to the collection of client problem templates. Arrow **3714** directs execution from operation **3712** to  
10 operation **3716**. Operation **3716** terminates the operations of this flowchart.

Figure **93** depicts a flowchart of further details of operation **2604** of Figure **53** supporting use of a client problem template to create an educated service query using a first service interface in accordance with certain embodiments. Arrow **3730** directs the flow of execution from starting operation **2604** to operation **3732**.  
15 Operation **3732** performs invoking one of the client problem templates. Arrow **3734** directs execution from operation **3732** to operation **3736**. Operation **3736** performs responding by client to invoked client problem templates to create the educated query message. Arrow **3738** directs execution from operation **3736** to operation **3740**. Operation **3740** terminates the operations of this flowchart.

- 20 Figure **94** depicts a flowchart of operations embodied in a service profiler process performed by a service-flow engine to generate and send client problem templates to clients in accordance with certain embodiments. Operation **3760** starts the operations of this flowchart. Arrow **3762** directs the flow of execution from operation **3760** to operation **3764**. Operation **3764** performs generating a  
25 client problem template from the client service profile. Arrow **3766** directs execution from operation **3764** to operation **3768**. Operation **3768** performs sending the client problem template to the client at the corresponding client address. Arrow **3770** directs execution from operation **3768** to operation **3772**. Operation **3772** terminates the operations of this flowchart.

- 30 Figure **95** depicts a flow diagram of a service profiler process in accordance with certain embodiments. Box **3800** designates a Service Profiler Process Dispatcher. This communicates via physical transport mechanism **3802** to

5 network **3804**. Box **3808** designates Service profiler sub-process 1 on service-flow engine 1, performing the operation **2630** of Figure 54. This communicates via physical transport mechanism **3806** to network **3804**. Box **3812** designates Service profiler sub-process 2 on service-flow engine 2, performing the operation **2740** of Figure 57. This communicates via physical transport mechanism **3810** to  
 10 network **3804**. Box **3816** designates Service profiler sub-process 3 on service-flow engine 3, performing the operation **3040** of Figure 69. This communicates via physical transport mechanism **3814** to network **3804**. Box **3820** designates Service profiler sub-process 4 on service-flow engine 4, performing the operation **3270** of Figure 76. This communicates via physical transport mechanism **3818** to  
 15 network **3804**. Box **3824** designates Service profiler sub-process 5 on service-flow engine 5, performing the operation **3470** of Figure 84. This communicates via physical transport mechanism **3822** to network **3804**. Box **3828** designates Service profiler sub-process 6 on service-flow engine 6, performing the operation **3490** of Figure 85. This communicates via physical transport mechanism **3826** to  
 20 network **3804**. Box **3832** designates Service profiler sub-process 7 on service-flow engine 7, performing the operation **3760** of Figure 94. This communicates via physical transport mechanism **3830** to network **3804**.

Note that in certain alternative embodiments, collections of these sub-processes may preferably reside on a single service-flow engine. Note that in certain other  
 25 embodiments, multiple service-flow engines may be performing a given sub-process.

Figure **96** depicts a flow diagram of a computer program capable of receiving a message from a service provider containing a service recommendation and responding to the message containing the service recommendation in  
 30 accordance with an aspect of the invention. Operation **3850** starts the operations of this flowchart. Arrow **3852** directs the flow of execution from operation **3850** to operation **3854**. Operation **3854** performs receiving the client message with an embedded service recommendation. Arrow **3856** directs execution from

operation **3854** to operation **3858**. Operation **3858** performs displaying the received client message with embedded service recommendation. Arrow **3860** directs execution from operation **3858** to operation **3862**. Operation **3862** performs responding to the client message with embedded service recommendation. Arrow **3864** directs execution from operation **3862** to operation **3866**. Operation **3866** terminates the operations of this flowchart.

Figure **97** depicts a flowchart of further details of the code of **3854** of Figure **96** supporting receiving a client message with an embedded service recommendation in accordance with certain embodiments. Arrow **3880** directs the flow of execution from starting operation **3854** to operation **3882**. Operation **3882** performs receiving an encrypted client message with embedded service recommendation. Arrow **3884** directs execution from operation **3882** to operation **3886**. Operation **3886** performs processing the received, encrypted client message with embedded service recommendation to create the received client message with embedded service recommendation. Arrow **3888** directs execution from operation **3886** to operation **3890**. Operation **3890** terminates the operations of this flowchart.

Figure **98** depicts a flowchart of further details of the code of **3862** of Figure **96** supporting responding to the client response message in accordance with certain embodiments. Arrow **3900** directs the flow of execution from starting operation **3862** to operation **3902**. Operation **3902** performs generating a client service recommendation message from said embedded service recommendation. Arrow **3904** directs execution from operation **3902** to operation **3906**. Operation **3906** performs sending said client service recommendation message to said service-flow engine. Arrow **3908** directs execution from operation **3906** to operation **3910**. Operation **3910** terminates the operations of this flowchart.

Figure **98A** depicts a flowchart of further details of **3311** of Figure **78** supporting integrating a service order in accordance with certain embodiments.

5 Arrow **3920** directs the flow of execution from starting operation **3311** to  
operation **3922**. Operation **3922** determines if the received client response  
message contains an embedded service recommendation. Arrow **3924** directs  
execution from operation **3922** to operation **3926**. Arrow **3924** directs execution  
when the determination is ☐Yes☐ to operation **3926**. Arrow **3954** directs execution  
10 when the determination is ☐No☐ to operation **3946**.

Operation **3926** performs receiving the client service order message from the first  
client. Arrow **3928** directs execution from operation **3926** to operation **3930**.  
Operation **3930** determines if the client service order message from the first  
client is compatible with the embedded service recommendation contained in the  
15 received client response message. Arrow **3932** directs execution from operation  
**3930** to operation **3934**. Arrow **3932** directs execution when the determination is  
☐Yes☐ to operation **3934**. Arrow **3956** directs execution when the determination is  
☐No☐ to operation **3946**.

Operation **3934** determines if the client service order received from the first client  
20 authorizes the service order. Arrow **3936** directs execution from operation **3934**  
to operation **3938**. Arrow **3936** directs execution when the determination is ☐Yes☐  
to operation **3938**. Arrow **3958** directs execution when the determination is ☐No☐  
to operation **3946**.

Operation **3938** determines a first pharmacy from the client service order. Arrow  
25 **3940** directs execution from operation **3938** to operation **3942**. Operation **3942**  
performs generates and sends the service order message to the first pharmacy  
based upon the received client response message and the received client  
service order message. Arrow **3944** directs execution from operation **3942** to  
operation **3946**. Operation **3946** terminates the operations of this flowchart.

30 Figure **98B** depicts a flowchart of further details of **3324** of Figure **78A** supporting  
generating a pharmacy service order in accordance with certain embodiments.

5 Arrow **3960** directs the flow of execution from starting operation 1324 to  
operation **3962**. Operation **3962** determines if the processed, received client  
service order is compatible with the processed, received service provider service  
recommendation. Arrow **3964** directs execution when the determination is 'Yes'  
to operation **3966**. Arrow **3978** directs usage when the determination is 'No' to  
10 operation **3970**.

Operation **3966** generates a pharmacy service order message from the  
processed, received service provider service recommendation message and the  
processed, received client service order. Arrow **3968** directs execution from  
operation **3966** to operation **3970**. Operation **3970** terminates the operations of  
15 this flowchart.

Figure **98C** depicts a flowchart of further details of **3326** of Figure **78A** supporting  
sending a pharmacy service order to a pharmacy in accordance with certain  
embodiments.

Arrow **3980** directs the flow of execution from starting operation **3326** to  
20 operation **3962**. Operation **3962** determines if the processed, received client  
service order is compatible with the processed, received service provider service  
recommendation. Arrow **3984** directs execution from operation **3962** to operation  
**3986**. Arrow **3984** directs execution when the determination is ☐Yes☐ to operation  
**3986**. Arrow **3998** directs usage when the determination is ☐No☐ to operation  
25 **3994**.

Operation **3986** performs determine the first pharmacy from the processed,  
received client service order. Arrow **3988** directs execution from operation **3986**  
to operation **3990**. Operation **3990** performs sending the pharmacy service order  
message to the first pharmacy. Arrow **3992** directs execution from operation  
30 **3990** to operation **3994**. Operation **3994** terminates the operations of this  
flowchart.

- 5 Figure **98D** depicts a flowchart of further details of **3106** of Figure **71** supporting determining a routing chain of service extenders and embedding the routing chain into a second client query in accordance with certain embodiments.

Arrow **4010** directs the flow of execution from starting operation **1106** to operation **4012**. Operation **4012** determines a routing chain of service extenders.

- 10 Arrow **4014** directs execution from operation **4012** to operation **4016**. Operation **4016** embeds the routing chain of service extenders into the second service query. Arrow **4018** directs execution from operation **4016** to operation **4020**. Operation **4020** terminates the operations of this flowchart.

- 15 Note that a routing chain of service extenders is a collection of at least one service extender to whom the second client query will be routed after the first service extender has added their proposed response to the client query.

- 20 Figure **98E** depicts a flowchart of further details of **3178** of Figure **72** supporting determining successor service extenders in an embedded service extender routing chain, generating a successor service query message with embedded proposed client response and sending the successor client service query to the successor service extender.

- 25 Arrow **4030** directs the flow of execution from starting operation **1178** to operation **4032**. Operation **4032** determines if there is a successor service extender in the embedded service extender chain. Arrow **4034** directs execution from operation **4032** to operation **4036**. Arrow **4034** directs execution when the determination is ☐Yes☐ to operation **4032**. Arrow **4048** directs execution when the determination is ☐No☐ to operation **4044**.

- 30 Operation **4036** generates the successor service query message with the embedded proposed client response. Arrow **4038** directs execution from operation **4036** to operation **4040**. Operation **4040** send the successor client service query to the successor service extender. Arrow **4042** directs execution



5 from operation **4040** to operation **4044**. Operation **4044** terminates the operations of this flowchart.

Figure **98F** depicts a flowchart of further details of **2646** of Figure **54** supporting generating a routing tree of service providers with first service provider final destination and source list of service providers, generating and sending a source  
10 service query to each service provider included in the service provider source list.

Arrow **4060** directs the flow of execution from starting operation **646** to operation **4062**. Operation **4062** performs generating a routing tree of service providers with the first service provider the final destination of the routing tree and a source list of service providers of the routing tree. Arrow **4064** directs execution from  
15 operation **4062** to operation **4066**. Operation **4066** performs generating and sending a source service query for and to each service provider belonging to the source list of the routing tree. Arrow **4068** directs execution from operation **4066** to operation **4070**. Operation **4070** terminates the operations of this flowchart.

20 This disclosure is provided to reveal a embodiment of the invention and a best mode for practicing the invention. However, one skilled in the art will readily appreciate that other approaches may be substituted for those set forth herein without departing from the spirit and scope of the present invention. Further, additional advantages, applications and modifications of the invention will readily  
25 occur to those skilled in the art. Accordingly, the invention should only be limited by the claims included below.

5

### **In the Claims**

1. A method of messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer from time to time capable of receiving and sending messages upon said network at a corresponding physician address on said network, at least one patient, each  
10 operating a computer from time to time capable of receiving and sending messages upon said network at a corresponding patient address on said network, and a workflow engine accessing said network capable of receiving and sending messages upon said network at least one workflow engine address on said network, comprising;

15 using a first medical message wizard by said patient on said patient operated computer further comprising;

generating an educated query message; and

sending said educated query message to one of said workflow engine addresses; and

20 performing a medical profiler process by said workflow engine further comprising

receiving said educated query message at said workflow engine address;

processing said received educated query message, to create a processed, received educated query message;

generating a patient message log entry in a medical profile of said patient

25 from said processed, received educated query message;

generating a patient medical query message from said processed, received educated query message; and

sending said patient medical query message to a first physician with said corresponding physician address; and

30 using a second medical message wizard by said first physician on said first physician operated computer at said corresponding physician address further comprising:

receiving said patient medical query message;

5           processing said received patient medical query message, to create a  
processed, received patient medical query message;  
          generating a physician-viewable patient medical query message from said  
processed, received patient medical query message; and  
          displaying said physician-viewable patient medical query message.

10    2.    A method supporting messaging upon a network implementing a  
messaging protocol involving at least one physician, each operating a computer  
at a corresponding physician address on said network, at least one patient, each  
operating a computer at a corresponding patient address on said network, and a  
medical profiler accessing said network with at least one medical profiler address  
15   on said network, as recited in claim 1;

          wherein using said second medical message wizard by said first physician  
further comprises;

          responding to said physician-viewable patient medical query message, to  
create a first-physician response;

20           generating a patient response message from said physician-viewable  
patient medical query message and said first-physician response;

          sending said patient response message to said patient at said  
corresponding  
patient address; and

25           copying said patient response message with an appended physician  
billing  
data to said workflow engine address; and

          wherein said medical profiler process further comprises:

          receiving said copied patient response message with said appended  
30   physician billing data;

          processing said received, copied patient response message with said  
appended physician billing data, generating a processed, received copied patient  
response message with said appended physician billing data; and

5           generating a patient response log entry in said medical profile of said patient

from said processed, received copied patient response message with said appended physician billing data; and

10           using said first message wizard on said patient operated computer at said corresponding patient address further comprises;

          receiving said patient response message;

          processing said received patient response message to create a processed,

received patient response message; and

15           displaying said processed, received patient response message.

3.    A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a  
20    medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 2;

          wherein generating said educated query message by said first message wizard on said patient operated computer further comprises;

          providing patient-to-profiler authentication key; and

25           encrypting said educated query message with said patient-to-profiler authentication key; and

          wherein processing said received educated query message by said medical profiler process further comprises;

          providing profiler-from-patient authentication key; and

30           decrypting said received educated query message with said profiler-from patient authentication key; and

          wherein generating said patient medical query message by said medical profiler process further comprises;

5 providing a profiler-to-first-physician authentication key; and  
encrypting said patient medical query message with said profiler-to-first  
physician authentication key; and

wherein processing said received patient medical query message using  
said second message wizard further comprises;

10 providing a first-physician-from-profiler authentication key; and  
decrypting said received patient medical query message with said first  
physician-from-profiler authentication key; and

wherein copying said patient response message with an appended  
physician billing data to said workflow engine address using said second  
message wizard further comprises;

15 providing a first-physician-to-profiler authentication key;  
encrypting said patient response message with an appended physician  
billing data with said first-physician-to-profiler authentication key, to create a first-  
physician-to-profiler encrypted patient response message with an appended  
20 physician billing data; and

sending said first-physician-to-profiler encrypted patient response  
message with an appended physician billing data to said workflow engine as said  
copied patient response message with an appended physician billing data; and

25 wherein processing said received, copied patient response message with  
said appended physician billing data by said medical profiler process further  
comprises;

30 providing profiler-from-first-physician authentication key; and  
decrypting said received, copied patient response message with said  
appended physician billing data with said profiler-from-first-physician  
authentication key, generating said processed, received patient response  
message with said appended physician billing data.

4. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one physician, each operating a computer

5 at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 3;

wherein generating said patient response message by said second message wizard on said first physician operated computer further comprises

providing a first-physician-to-patient authentication key;

generating an unencrypted patient response message from said physician viewable patient medical query message and said first-physician response; and

10 encrypting said unencrypted patient response message with said first physician-to-patient authentication key, to create said patient response message; and

wherein processing said received patient response message using said first message wizard on said patient operated computer further comprises

providing a patient-from-first-physician authentication key; and

20 decrypting said received patient response message with said patient-from first-physician authentication key, to create said processed, received patient response message.

5. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 3;

wherein sending said patient response message to said patient at said corresponding patient address using said second message wizard by said first physician further comprises sending a patient response message destined for said patient at said corresponding patient address to said workflow engine address;

5 wherein generating said patient response message by said second message wizard on said first physician operated computer further comprises providing a first-physician-to-profiler authentication key;

providing said patient corresponding patient address as a destination address within said patient response message, to create an unencrypted patient response message with said patient corresponding address destination; and

10 encrypting said unencrypted patient response message with said patient corresponding address destination with said first-physician-to-patient authentication key, to create said patient response message destined for said patient at said corresponding patient address; and

15 wherein performing said medical profiler process by said workflow engine further comprises:

receiving said patient response message destined for said patient at said corresponding patient address at said workflow engine address;

20 processing said received patient response message destined for said patient at said corresponding patient address, to create said processed patient response message for said patient at said corresponding patient address further comprises;

providing a profiler-from-first-physician authentication key; and

25 decrypting said patient response message destined for said patient at said corresponding patient address with said profiler-from-first-physician authentication key, to create processed patient response message for said patient at said corresponding patient address;

sending processed patient response message for said patient at said corresponding patient address to said patient at said corresponding address.

30 6. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a

5 medical profiler accessing said network with at least one medical profiler address  
on said network, as recited in claim 3;

wherein there is at least one physician extender operating a computer  
capable of receiving and sending messages at a corresponding address upon  
said network; and

10 wherein generating a patient medical query message in said medical  
profiler process further comprises

selecting a first of said physician extenders;

generating a second patient medical query message for said first  
physician

15 extender; and

sending said second patient medical query message to said first physician  
extender at said corresponding physician extender address; and

further comprising using a third medical message wizard by said first  
physician extender on said first physician extender operated computer further  
20 comprising:

receiving said second patient medical query message at said first  
physician

extender corresponding physician extender address;

processing said received second patient medical query message, to

25 create a

processed, received second patient medical query message;

generating a physician extender-viewable patient medical query message  
from said processed, received second patient medical query message;

displaying said physician extender-viewable patient medical query

30 message;

responding to said physician extender-viewable patient medical query  
message to create a first physician extender response;

generating a proposed patient response message from said physician



5 extender-viewable patient medical query message and said first physician  
extender response; and

sending said proposed patient response message to said first-physician at  
said corresponding physician address; and

generating said physician-viewable patient medical query message using  
10 said second message wizard further comprising

receiving said proposed patient response message from said first  
physician

extender at said corresponding physician extender address;

processing said received proposed patient response message, to create a  
15 processed, received proposed patient response message; and

inserting said processed, received proposed patient response message as  
part of said physician-viewable patient medical query message; and

generating said patient response message using said second message  
wizard further comprising reviewing said proposed patient response message to  
20 create said patient response message.

7. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one physician, each operating a computer  
at a corresponding physician address on said network, at least one patient, each  
operating a computer at a corresponding patient address on said network, and a  
25 medical profiler accessing said network with at least one medical profiler address  
on said network, as recited in claim 6;

wherein at least one of said physician extenders is an administrator.

8. A method supporting messaging upon a network implementing a  
30 messaging protocol involving at least one physician, each operating a computer  
at a corresponding physician address on said network, at least one patient, each  
operating a computer at a corresponding patient address on said network, and a

- 5 medical profiler accessing said network with at least one medical profiler address  
on said network, as recited in claim 6;  
wherein at least one of said physician extenders is a physician assistant.

9. A method supporting messaging upon a network implementing a  
10 messaging protocol involving at least one physician, each operating a computer  
at a corresponding physician address on said network, at least one patient, each  
operating a computer at a corresponding patient address on said network, and a  
medical profiler accessing said network with at least one medical profiler address  
on said network, as recited in claim 6;

- 15 wherein using said third medical message wizard on further comprises:  
generating a copied proposed patient response message with an  
appended physician extender billing data from said physician extender-viewable  
patient medical query message and said first physician extender response; and  
sending said copied proposed patient response message sent with an  
20 appended physician extender billing data to said workflow engine address; and  
wherein said medical profiler process further comprises:  
receiving said copied proposed patient response message with said  
appended physician extender billing data;  
processing said received copied proposed patient response message with  
25 said appended physician extender billing data, to create a processed, received  
copied proposed patient response message with said appended physician  
extender billing data; and  
generating a physician extender log entry in said medical profile of said  
patient from said processed, received copied patient response message with  
30 said appended physician extender billing data.

10. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one physician, each operating a computer  
at a corresponding physician address on said network, at least one patient, each

5 operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 6;

wherein generating said patient response message to said patient address in using said second medical message wizard further comprises:

10 generating an embedded prescription;

inserting said embedded prescription in said patient response message;

generating a physician prescription message from said embedded prescription;

sending said physician prescription message to said workflow engine;

15 said medical profiler process performed by said workflow engine further comprising:

integrating a prescription order further comprising:

receiving said physician prescription message;

20 processing said received physician prescription message to create a processed, received physician prescription message.

11. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each  
25 operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 10;

wherein said network further involves at least one pharmacy, each operating a computer from time to time capable of receiving and sending  
30 messages upon said network at a corresponding pharmacy address on said network;

wherein generating said patient response message to said patient address in using said second medical message wizard further comprises:

5 maintaining a list of said pharmacies each with said corresponding pharmacy

address; and

integrating a prescription order further comprising:

receiving a patient prescription order message;

10 processing said patient prescription message to create a processed, received patient prescription message;

generating a pharmacy prescription order message from said processed, received physician prescription message and said processed, received patient prescription message and said list of said pharmacies; and

15 sending said pharmacy prescription order message to one of said pharmacies at said corresponding address; and

using said first message wizard on said patient operated computer at said corresponding patient address further comprises:

20 responding to said patient response message using said first messaging wizard further comprising;

generating a patient prescription message from said embedded prescription; and

sending said patient prescription message to said workflow engine.

12. A method supporting messaging upon a network implementing a  
25 messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 10;

30 wherein at least one of said physician extenders is a nurse;

wherein generating said proposed patient response message using said third medical message wizard by said nurse further comprises

5           generating a proposed embedded prescription refill in said proposed patient

response message;

          reviewing said proposed patient response message using said second  
messaging wizard by said first physician further comprises reviewing said  
10   proposed embedded prescription refill further comprising at least one of the  
collection containing;

          approving said proposed embedded prescription refill;

          revising said proposed embedded prescription refill;

          deleting said proposed embedded prescription refill; and

15           generating a second embedded prescription.

13.   A method supporting messaging upon a network implementing a  
messaging protocol involving at least one physician, each operating a computer  
at a corresponding physician address on said network, at least one patient, each  
operating a computer at a corresponding patient address on said network, and a  
20   medical profiler accessing said network with at least one medical profiler address  
on said network, as recited in claim 6;

          wherein said third message wizard is implemented as a computer program  
residing in computer readable media accessible by said physician extender  
operating said computer.

25   14.   A method supporting messaging upon a network implementing a  
messaging protocol involving at least one physician, each operating a computer  
at a corresponding physician address on said network, at least one patient, each  
operating a computer at a corresponding patient address on said network, and a  
medical profiler accessing said network with at least one medical profiler address  
30   on said network, as recited in claim 2

          wherein said medical profiler process further comprises generating a  
billing report from said medical profile of said patient.

5 15. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one physician, each operating a computer  
at a corresponding physician address on said network, at least one patient, each  
operating a computer at a corresponding patient address on said network, and a  
medical profiler accessing said network with at least one medical profiler address  
10 on said network, as recited in claim 14;

wherein said network further involves a billing system accessing said  
network at a billing system address on said network; and

wherein said workflow engine process further comprises  
sending said billing report from said medical profile of said patient to said  
15 billing system address; and

further comprising a billing process performed by said billing system  
further comprising:

receiving said billing report for said patient sent from said workflow engine  
process; and

20 generating a bill for said patient from said received billing report.

16. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one physician, each operating a computer  
at a corresponding physician address on said network, at least one patient, each  
operating a computer at a corresponding patient address on said network, and a  
25 medical profiler accessing said network with at least one medical profiler address  
on said network, as recited in claim 15;

wherein generating said bill for said patient from said received billing  
report further comprises at least one of the collection comprising:

generating a personal bill for said patient; and

30 generating at least one insurance bills for said patient to a corresponding  
insurance provider.

17. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one physician, each operating a computer

5 at a corresponding physician address on said network, at least one patient, each  
operating a computer at a corresponding patient address on said network, and a  
medical profiler accessing said network with at least one medical profiler address  
on said network, as recited in claim 16, wherein said corresponding insurance  
provider includes the United States Government.

10 18. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one physician, each operating a computer  
at a corresponding physician address on said network, at least one patient, each  
operating a computer at a corresponding patient address on said network, and a  
15 medical profiler accessing said network with at least one medical profiler address  
on said network, as recited in claim 16, wherein said corresponding insurance  
provider includes a commercial insurance provider.

20 19. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one physician, each operating a computer  
at a corresponding physician address on said network, at least one patient, each  
operating a computer at a corresponding patient address on said network, and a  
medical profiler accessing said network with at least one medical profiler address  
on said network, as recited in claim 2;

wherein said network involves at least two physicians including a second  
physician;

25 wherein responding to said physician-viewable patient medical query  
message using said second message wizard by said first physician further  
comprises;

generating a first-physician-second opinion request message;

sending said first-physician-second opinion request message to said

30 second  
physician at said corresponding physician address;

5 further comprising using said second message wizard by said second physician operating said computer at said corresponding physician address further comprises;

receiving said first-physician-second opinion request message at said second

10 physician corresponding physician address;

processing said received first-physician-second opinion request message, to

create a processed, received first-physician-second opinion request;

15 displaying said processed, received first-physician-second opinion request;

responding to said displayed processed, received first-physician-second opinion request to create a second opinion response;

generating a second opinion message from said second opinion response; and

20 sending said second opinion message to said first physician at said corresponding physician address.

20. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each  
25 operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 2;

wherein using said second wizard further comprises maintaining a collection of patient response templates, further comprising

30 creating one of said patient response templates of said patient response template collection;

editing one of said patient response templates of said patient response template collection; and



5 deleting one of said patient response templates of said patient response  
template collection; and

wherein responding to said patient medical query message using said  
second wizard further comprises

invoking one of said patient response template in conjunction with said

10 processed, received patient medical query message; and

responding to said invoked patient response template and said processed,  
received patient medical query message to create said first-physician  
response.

21. A method supporting messaging upon a network implementing a  
15 messaging protocol involving at least one physician, each operating a computer  
at a corresponding physician address on said network, at least one patient, each  
operating a computer at a corresponding patient address on said network, and a  
medical profiler accessing said network with at least one medical profiler address  
on said network, as recited in claim 1;

20 wherein using said first message wizard further comprises maintaining a  
collection of patient problem templates, further comprising

receiving a patient problem template from said medical profiler;

processing said received patient problem template to create a processed,  
received patient problem template; and

25 adding said processed, received patient problem template to said  
collection

of patient problem templates; and

wherein generating an educated query message using said first message  
wizard further comprises

30 invoking one of said patient problem template; and

responding to said invoked patient problem template to generate said  
educated query message; and

wherein performing said workflow engine processes further comprises

5           generating a patient problem template from said medical profile of said  
patient;  
          sending said generated patient problem template to said patient.

22.   A method supporting messaging upon a network implementing a  
messaging protocol involving at least one physician, each operating a computer  
10   at a corresponding physician address on said network, at least one patient, each  
operating a computer at a corresponding patient address on said network, and a  
medical profiler accessing said network with at least one medical profiler address  
on said network, as recited in claim 1;

          wherein performing said medical profiler process further comprises  
15   maintaining a routing table comprised of at least one routing directive to said first  
physician;

          wherein sending said patient medical query message to a first physician  
with said corresponding physician address further comprises:

          examining said routing table based upon said patient medical query  
20   message to find a first of said routing directives to said first physician compatible  
with said patient medical query message; and

          finding said first routing directive to said first physician compatible with  
said patient medical query message.

23.   A method supporting messaging upon a network implementing a  
25   messaging protocol involving at least one physician, each operating a computer  
at a corresponding physician address on said network, at least one patient, each  
operating a computer at a corresponding patient address on said network, and a  
medical profiler accessing said network with at least one medical profiler address  
on said network, as recited in claim 22;

30           wherein maintaining a routing table comprised of at least one routing  
directive to said first physician comprises

          extracting from said medical profile one of said patients a patient routing  
extract;

5 and integrating into the routing table said patient routing extract.

24. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a  
10 medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 22;

wherein maintaining a routing table comprised of at least one routing directive to said first physician comprises

extracting from said medical profile of at least two of said patients a  
15 patient routing pattern;

and integrating into the routing table said patient routing pattern.

25. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each  
20 operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 1, wherein said messaging protocol supports email.

26. A method supporting messaging upon a network implementing a  
25 messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 25, wherein said messaging protocol  
30 supports TCPIP.

27. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer

5 at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 26, wherein said messaging protocol supports the World Wide Web.

10 28. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address  
15 on said network, as recited in claim 1, wherein said second message wizard is implemented as a computer program residing on a computer readable medium accessible by said physician operated computer.

20 29. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 1, wherein said first message wizard is implemented as a computer program residing on a computer readable medium  
25 accessible by said patient operated computer.

30 30. A method supporting messaging upon a network implementing a messaging protocol involving at least one physician, each operating a computer at a corresponding physician address on said network, at least one patient, each operating a computer at a corresponding patient address on said network, and a medical profiler accessing said network with at least one medical profiler address on said network, as recited in claim 1;

5            wherein said medical profiler resides on at least one server capable of  
accessing said network to receive and send messages; and

          wherein said workflow engine process is implemented as a program  
system wherein the various stated operations of said process are implemented  
as component program which may be concurrently operating.

10        31. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one physician, each operating a computer  
at a corresponding physician address on said network, at least one patient, each  
operating a computer at a corresponding patient address on said network, and a  
medical profiler accessing said network with at least one medical profiler address  
15        on said network, as recited in claim 30, wherein said workflow engine resides on  
exactly one server capable of accessing said network to receive and send  
messages.

20        32. A method supporting messaging upon a network implementing a  
messaging

          protocol involving at least one physician, each operating a computer at a  
corresponding physician address on said network, at least one patient, each  
operating a computer at a corresponding patient address on said network, and a  
medical profiler accessing said network with at least one medical profiler address  
25        on said network, as recited in claim 31;

          wherein said medical profiler resides on a first server and a second server  
coupled to said first server by a second network implementing a second  
messaging protocol;

          wherein said first server capable of accessing said network to receive and  
30        send messages and maintaining a firewall to filter all messages received from  
said network providing at least one of said filtered, received messages from said  
first network to be received by said second server upon said second network;  
and

5            wherein said second server performs at least one of the stated operations  
of said workflow engine process.

33.    A computer program residing on a computer readable medium accessible  
by said patient operated computer capable of receiving a patient message with  
10    an embedded prescription and sending messages to a workflow engine  
including;

          code for receiving said patient message with said embedded prescription;  
          code for displaying said received patient message with said embedded  
prescription;

15            code for responding to said patient message with said embedded  
prescription further comprising:

          code for generating a patient prescription message from said embedded  
prescription; and

          code for sending said patient prescription message to said workflow  
20    engine.

34.    A method of messaging upon a network implementing a messaging  
protocol involving at least one service provider, each operating a computer from  
time to time capable of receiving and sending messages upon said network at a  
25    corresponding service provider address on said network, at least one client, each  
operating a computer from time to time capable of receiving and sending  
messages upon said network at a corresponding client address on said network,  
and a service-flow engine accessing said network capable of receiving and  
sending messages upon said network at least one service-flow engine address  
30    on said network, comprising;

          using a first service message interface by said client on said client  
operated computer further comprising:

          generating an educated query message; and

5            sending said educated query message to one of said service-flow engine addresses; and  
performing a service profiler process by said service-flow engine further comprising

10            receiving said educated query message at said service-flow engine address;

             processing said received educated query message, to create a processed, received educated query message;

             generating a client message log entry in a service profile of said client from said processed, received educated query message;

15            generating a client service query message from said processed, received educated query message; and

             sending said client service query message to a first service provider with said corresponding service provider address; and

20            using a second service message interface by said first service provider on said first service provider operated computer at said corresponding service provider address further comprising:

             receiving said client service query message;

             processing said received client service query message, to create a processed, received client service query message;

25            generating a service-provider-viewable client service query message from said processed, received client service query message; and

             displaying said service-provider-viewable client service query message.

35.    A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a  
30    computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 34;

5 wherein using said second service message interface by said first service provider further comprises:

responding to said service-provider-viewable client service query message,

to create a first-service-provider response;

10 generating a client response message from said service-provider-viewable client service query message and said first-service-provider response;

sending said client response message to said client at said corresponding client address; and

15 copying said client response message with an appended service provider billing data to said service-flow engine address; and

wherein said service profiler process further comprises:

receiving said copied client response message with said appended service

provider billing data;

20 processing said received, copied client response message with said appended service provider billing data, generating a processed, received copied client response message with said appended service provider billing data; and

generating a client response log entry in said service profile of said client from

25 said processed, received copied client response message with said appended service provider billing data; and

using said first message interface on said client operated computer at said corresponding client address further comprises:

receiving said client response message;

30 processing said received client response message to create a processed, received client response message; and

displaying said processed, received client response message.



5 36. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one service provider, each operating a  
computer at a corresponding service provider address on said network, at least  
one client, each operating a computer at a corresponding client address on said  
network, and a service profiler accessing said network with at least one service  
10 profiler address on said network, as recited in claim 35;

wherein generating said educated query message by said first message  
interface on said client operated computer further comprises

providing client-to-profiler authentication key; and

encrypting said educated query message with said client-to-profiler

15 authentication key; and

wherein processing said received educated query message by said service  
profiler process further comprises

providing profiler-from-client authentication key; and

decrypting said received educated query message with said profiler-from

20 client authentication key; and

wherein generating said client service query message by said service  
profiler process further comprises

providing a profiler-to-first-service-provider authentication key; and

encrypting said client service query message with said profiler-to-first

25 service provider authentication key; and

wherein processing said received client service query message using said  
second message interface further comprises

providing a first-service-provider-from-profiler authentication key; and

decrypting said received client service query message with said first

30 service-provider-from-profiler authentication key; and

wherein copying said client response message with an appended service  
provider billing data to said service-flow engine address using said second  
message interface further comprises

providing a first-service-provider-to-profiler authentication key;

5            encrypting said client response message with an appended service provider billing data with said first-service-provider-to-profiler authentication key, to create a first-service-provider-to-profiler encrypted client response message with an appended service provider billing data; and

10            sending said first-service-provider-to-profiler encrypted client response message with an appended service provider billing data to said service-flow engine as said copied client response message with an appended service provider billing data; and

15            wherein processing said received, copied client response message with said appended service provider billing data by said service profiler process further comprises

             providing profiler-from-first-service-provider authentication key; and

20            decrypting said received, copied client response message with said appended service provider billing data with said profiler-from-first-service-provider authentication key, generating said processed, received client response message with said appended service provider billing data.

37.    A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 36;

             wherein generating said client response message by said second message interface on said first service provider operated computer further comprises

30            providing a first-service-provider-to-client authentication key;

             generating an unencrypted client response message from said service provider viewable client service query message and said first-service-provider response; and

5            encrypting said unencrypted client response message with said first service-provider-to-client authentication key, to create said client response message; and

             wherein processing said received client response message using said first message interface on said client operated computer further comprises

10           providing a client-from-first-service-provider authentication key; and

             decrypting said received client response message with said client-from first-service-provider authentication key, to create said processed, received client response message.

38.    A method supporting messaging upon a network implementing a  
15    messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 36:

20           wherein sending said client response message to said client at said corresponding client address using said second message interface by said first service provider further comprises sending a client response message destined for said client at said corresponding client address to said service-flow engine address;

25           wherein generating said client response message by said second message interface on said first service provider operated computer further comprises

             providing a first-service-provider-to-profiler authentication key;

             providing said client corresponding client address as a destination

30    address within said client response message, to create an unencrypted client response message with said client corresponding address destination; and

             encrypting said unencrypted client response message with said client

5 corresponding address destination with said first-service-provider-to-client authentication key, to create said client response message destined for said client at said corresponding client address; and

wherein performing said service profiler process by said service-flow engine further comprises:

10 receiving said client response message destined for said client at said corresponding client address at said service-flow engine address;

processing said received client response message destined for said client at said corresponding client address, to create said processed client response message for said client at said corresponding client address further comprises

15 providing a profiler-from-first-service-provider authentication key; and

decrypting said client response message destined for said client at said corresponding client address with said profiler-from-first-service-provider authentication key, to create processed client response message for said client at said corresponding client address;

20 sending processed client response message for said client at said corresponding client address to said client at said corresponding address.

39. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least  
25 one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 36;

wherein there is at least one service extender operating a computer capable of receiving and sending messages at a corresponding address upon  
30 said network; and

wherein generating a client service query message in said service profiler process further comprises

selecting a first of said service extenders;

5           generating a second client service query message for said first service provider extender; and

          sending said second client service query message to said first service provider

extender at said corresponding service extender address; and

10           further comprising using a third service message interface by said first service extender on said first service extender operated computer further comprising:

          receiving said second client service query message at said first service provider

15           extender corresponding service extender address;

          processing said received second client service query message, to create a processed, received second client service query message;

          generating a service extender-viewable client service query message from said processed, received second client service query message;

20           displaying said service extender-viewable client service query message;

          responding to said service extender-viewable client service query message to create a first service extender response;

          generating a proposed client response message from said service provider

25           extender-viewable client service query message and said first service extender response; and

          sending said proposed client response message to said first-service-provider at

30           said corresponding service provider address; and

          generating said service-provider-viewable client service query message using said second message interface further comprising

          receiving said proposed client response message from said first service provider

5 extender at said corresponding service extender address;

processing said received proposed client response message, to create a processed, received proposed client response message; and

inserting said processed, received proposed client response message as part of said service-provider-viewable client service query message; and

10 generating said client response message using said second message interface further comprising reviewing said proposed client response message to create said client response message.

40. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 39;

wherein at least one of said service extenders is an administrator.

41. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 39;

wherein at least one of said service extenders is a service provider assistant.

42. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said

5 network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 39;

wherein using said third service message interface on further comprises:

generating a copied proposed client response message with an  
appended service extender billing data from said service extender-viewable client  
10 service query message and said first service extender response; and

sending said copied proposed client response message sent with an  
appended service extender billing data to said service-flow engine address; and

wherein said service profiler process further comprises:

receiving said copied proposed client response message with said  
15 appended service extender billing data;

processing said received copied proposed client response message with  
said appended service extender billing data, to create a processed, received  
copied proposed client response message with said appended service extender  
billing data; and

20 generating a service extender log entry in said service profile of said  
client from said processed, received copied client response message with said  
appended service extender billing data.

43. A method supporting messaging upon a network implementing a  
25 messaging protocol involving at least one service provider, each operating a  
computer at a corresponding service provider address on said network, at least  
one client, each operating a computer at a corresponding client address on said  
network, and a service profiler accessing said network with at least one service  
profiler address on said network, as recited in claim 39;

30 wherein generating said client response message to said client address in  
using said second service message interface further comprises:

generating an embedded service recommendation;

inserting said embedded service recommendation in said client response  
message;

5           generating a service provider service recommendation message from said  
          embedded  
          service recommendation;

          sending said service provider service recommendation message to said  
          service-flow engine;

10          said service profiler process performed by said service-flow engine further  
          comprising:

          integrating a service order further comprising:

          receiving said service provider service recommendation message;

          processing said received service provider service recommendation  
15   message to create a  
          processed, received service provider service recommendation message.

44.   A method supporting messaging upon a network implementing a  
          messaging protocol involving at least one service provider, each operating a  
20   computer at a corresponding service provider address on said network, at least  
          one client, each operating a computer at a corresponding client address on said  
          network, and a service profiler accessing said network with at least one service  
          profiler address on said network, as recited in claim 43;

          wherein said network further involves at least one supplier, each operating  
25   a computer from time to time capable of receiving and sending messages upon  
          said network at a corresponding supplier address on said network;

          wherein generating said client response message to said client address in  
          using said second service message interface further comprises:

          maintaining a list of said suppliers each with said corresponding supplier  
30   address; and

          integrating a service order further comprising:

          receiving a client order message;

          processing said client service recommendation message to create a  
          processed, received client service recommendation message;



5           generating a supplier service order message from said processed,  
received

service provider service recommendation message and said processed, received  
client service recommendation message and said list of said suppliers; and

          sending said supplier service order message to one of said suppliers at

10       said corresponding address; and

          using said first message interface on said client operated computer at said  
corresponding client address further comprises:

          responding to said client response message using said first messaging  
interface further comprising:

15       generating a client service recommendation message from said  
embedded

service recommendation; and

          sending said client service recommendation message to said service-flow  
engine.

20       45. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one service provider, each operating a  
computer at a corresponding service provider address on said network, at least  
one client, each operating a computer at a corresponding client address on said  
network, and a service profiler accessing said network with at least one service  
25       profiler address on said network, as recited in claim 43;

          wherein at least one of said service extenders is a service assistant;

          wherein generating said proposed client response message using said  
third service message interface by said service assistant further comprises

          generating a proposed embedded service recommendation refill in said

30       proposed client response message;

          reviewing said proposed client response message using said second  
message interface by said first service provider further comprises reviewing said

5 proposed embedded service recommendation refill further comprising at least one of the collection containing;

approving said proposed embedded service recommendation refill;

revising said proposed embedded service recommendation refill;

deleting said proposed embedded service recommendation refill; and

10 generating a second embedded service recommendation.

46. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 39;

wherein said third message interface is implemented as a computer program residing in computer readable media accessible by said service extender operating said computer.

47. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 35;

wherein said service profiler process further comprises generating a billing report from said service profile of said client.

48. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said

5 network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 47;

wherein said network further involves a billing system accessing said network at a billing system address on said network; and

wherein said service-flow engine process further comprises

10 sending said billing report from said service profile of said client to said billing system address; and

further comprising a billing process performed by said billing system further comprising:

receiving said billing report for said client sent from said service-flow

15 engine

process; and

generating a bill for said client from said received billing report.

49. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a  
20 computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 48;

wherein generating said bill for said client from said received billing report

25 further comprises at least one of the collection comprising:

generating a personal bill for said client; and

generating at least one insurance bills for said client to a corresponding insurance provider.

50. A method supporting messaging upon a network implementing a  
30 messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service

5 profiler address on said network, as recited in claim 49, wherein said corresponding insurance provider includes the United States Government.

51. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least  
10 one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 49, wherein said corresponding insurance provider includes a commercial insurance provider.

52. A method supporting messaging upon a network implementing a  
15 messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 35;

20 wherein said network involves at least two service providers including a second service provider;

wherein responding to said service-provider-viewable client service query message using said second message interface by said first service provider further comprises

25 generating a first-service-provider-second opinion request message;

sending said first-service-provider-second opinion request message to said

second service provider at said corresponding service provider address;

30 further comprising using said second message interface by said second service provider operating said computer at said corresponding service provider address further comprises;

receiving said first-service-provider-second opinion request message at said

5 second

service provider corresponding service provider address;

processing said received first-service-provider-second opinion request  
message, to

create a processed, received first-service-provider-second opinion request;

10 displaying said processed, received first-service-provider-second opinion  
request;

responding to said displayed processed, received first-service-provider  
second opinion request to create a second opinion response;

generating a second opinion message from said second opinion response;

15 and

sending said second opinion message to said first service provider at said  
corresponding service provider address.

53. A method supporting messaging upon a network implementing a  
20 messaging protocol involving at least one service provider, each operating a  
computer at a corresponding service provider address on said network, at least  
one client, each operating a computer at a corresponding client address on said  
network, and a service profiler accessing said network with at least one service  
profiler address on said network, as recited in claim 35;

25 wherein using said second message interface further comprises  
maintaining a collection of client response templates, further comprising

creating one of said client response templates of said client response  
template collection;

editing one of said client response templates of said client response  
30 template collection; and

deleting one of said client response templates of said client response  
template collection; and

5            wherein responding to said client service query message using said second message interface further comprises

              invoking one of said client response template in conjunction with said processed, received client service query message; and

              responding to said invoked client response template and said processed,  
10        received client service query message to create said first-service-provider response.

54.    A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least  
15        one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 34;

              wherein using said first message interface further comprises maintaining a collection of client problem templates, further comprising

20            receiving a client problem template from said service profiler;

              processing said received client problem template to create a processed, received client problem template; and

              adding said processed, received client problem template to said collection of client problem templates; and

25            wherein generating an educated query message using said first message interface further comprises

              invoking one of said client problem template; and

              responding to said invoked client problem template to generate said educated query message; and

30            wherein performing said service-flow engine processes further comprises generating a client problem template from said service profile of said client;

              sending said generated client problem template to said client.

5 55. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one service provider, each operating a  
computer at a corresponding service provider address on said network, at least  
one client, each operating a computer at a corresponding client address on said  
network, and a service profiler accessing said network with at least one service  
10 profiler address on said network, as recited in claim 34;

wherein performing said service profiler process further comprises  
maintaining a routing table comprised of at least one routing directive to said first  
service provider;

wherein sending said client service query message to a first service  
15 provider with said corresponding service provider address further comprises:

examining said routing table based upon said client service query  
message to find a first of said routing directives to said first service provider  
compatible with said client service query message; and

finding said first routing directive to said first service provider compatible  
20 with said client service query message.

56. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one service provider, each operating a  
computer at a corresponding service provider address on said network, at least  
one client, each operating a computer at a corresponding client address on said  
25 network, and a service profiler accessing said network with at least one service  
profiler address on said network, as recited in claim 55;

wherein maintaining a routing table comprised of at least one routing  
directive to said first service provider comprises

extracting from said service profile one of said clients a client routing  
30 extract;

and integrating into the routing table said client routing extract.

57. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one service provider, each operating a

5 computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 55;

10 wherein maintaining a routing table comprised of at least one routing directive to said first service provider comprises

extracting from said service profile of at least two of said clients a client routing pattern;

and integrating into the routing table said client routing pattern.

58. A method supporting messaging upon a network implementing a  
15 messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 34, wherein said messaging  
20 protocol supports email.

59. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one service provider, each operating a  
computer at a corresponding service provider address on said network, at least  
one client, each operating a computer at a corresponding client address on said  
25 network, and a service profiler accessing said network with at least one service  
profiler address on said network, as recited in claim 58, wherein said messaging  
protocol supports TCPIP.

60. A method supporting messaging upon a network implementing a  
messaging protocol involving at least one service provider, each operating a  
30 computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service



5 profiler address on said network, as recited in claim 59, wherein said messaging protocol supports the World Wide Web.

61. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least  
10 one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 34, wherein said second message interface is implemented as a computer program residing on a computer readable medium accessible by said service provider operated  
15 computer.

62. A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least  
20 one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 34, wherein said first message interface is implemented as a computer program residing on a computer readable medium accessible by said client operated computer.

63. A method supporting messaging upon a network implementing a  
25 messaging protocol involving at least one service provider, each operating a computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 34;

30 wherein said service profiler resides on at least one server capable of accessing said network to receive and send messages; and

5            wherein said service-flow engine process is implemented as a program system wherein the various stated operations of said process are implemented as component program which may be concurrently operating.

64.    A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a  
10    computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 63, wherein said service-flow engine resides on exactly one server capable of accessing said network to  
15    receive and send messages.

65.    A method supporting messaging upon a network implementing a messaging protocol involving at least one service provider, each operating a  
20    computer at a corresponding service provider address on said network, at least one client, each operating a computer at a corresponding client address on said network, and a service profiler accessing said network with at least one service profiler address on said network, as recited in claim 64;

         wherein said service profiler resides on a first server and a second server coupled to said first server by a second network implementing a second  
25    messaging protocol;

         wherein said first server capable of accessing said network to receive and send messages and maintaining a firewall to filter all messages received from said network providing at least one of said filtered, received messages from said first network to be received by said second server upon said second network;  
30    and

         wherein said second server performs at least one of the stated operations of said service-flow engine process.

5 66. A computer program residing on a computer readable medium accessible by a client operated computer capable of receiving a client message with an embedded service recommendation and sending messages to a service-flow engine including

code for receiving said client message with said embedded service  
10 recommendation;

code for displaying said received client message with said embedded service recommendation;

code for responding to said client message with said embedded service recommendation further comprising: code for generating a client service  
15 recommendation message from said embedded

service recommendation; and

code for sending said client service recommendation message to said service-flow engine.

67. A computer program residing on a computer readable medium accessible  
20 by a workflow engine computer system communicating with a network, said network further communicating with at least one patient operated computer and further communicating with at least one physician operated computer comprising;

code for receiving an educated query message from a first of said patients via said patient operated computer and generating a patient message log entry in  
25 a medical profile of said first patient; and

code for receiving a patient response message from a first of said physicians based upon said educated query message from said first patient and generating a physician response log entry in said medical profile of said first patient.

30 68. A computer program residing on a computer readable medium accessible by a workflow engine computer system communicating with a network, said network further communicating with at least one patient operated computer and

5 further communicating with at least one physician operated computer, as recited in claim 67 further comprising;

code for generating a first patient medical query message based upon received said educated query message from said first patient and sending said first patient medical query message to said first physician.

10 69. A computer program residing on a computer readable medium accessible by a workflow engine computer system communicating with a network, said network further communicating with at least one patient operated computer and further communicating with at least one physician operated computer, as recited in claim 68;

15 wherein code for generating a first patient medical query message based upon said received educated query message from said first patient and sending said first patient medical query message to said first physician further comprises code for determining said first physician based upon said received educated query message from said first patient.

20 70. A computer program residing on a computer readable medium accessible by a workflow engine computer system communicating with a network, said network further communicating with at least one patient operated computer and further communicating with at least one physician operated computer, as recited in claim 69, further comprises

25 code for determining if said received patient response message contains an embedded prescription;

code for receiving a patient prescription order message from said first patient; and

30 code for generating a prescription order message based upon said received patient prescription order message and said received patient response message and for sending said prescription order message to a first pharmacy

whenever said received patient response message contains said embedded prescription; and

5            whenever said received patient prescription order message is compatible with said embedded prescription contained in said received patient response message; and

             whenever said received patient prescription order message authorizes sending said prescription order message to said first pharmacy.

10        71.    A computer program residing on a computer readable medium accessible by a workflow engine computer system communicating with a network, said network further communicating with at least one patient operated computer and further communicating with at least one physician operated computer, as recited in claim 70;

15            wherein said network further communicates with at least one physician extender operated computer; and

             further comprising code for generating a second patient medical query message based upon said received educated query message from said first patient and sending said second patient medical query message to a first of said physician extenders operated computer.

20        72.    A computer program residing on a computer readable medium accessible by a workflow engine computer system communicating with a network, said network further communicating with at least one patient operated computer and further communicating with at least one physician operated computer, as recited in claim 71;

25            wherein code for generating a second patient medical query message based upon said received educated query message from said first patient and sending said second patient medical query message to a first of said physician extenders further comprises

30            code for determining said first physician extender based upon said received educated query message from said first patient.

5 73. A computer program residing on a computer readable medium accessible by a workflow engine computer system communicating with a network, said network further communicating with at least one patient operated computer and further communicating with at least one physician operated computer, as recited in claim 71;

10 further comprising code for receiving a proposed first patient response message from said first physician extender via said physician extender operated computer and generating a proposed first response log entry from said received proposed first patient response message in said medical profile of said first patient.

15 74. A computer program residing on a computer readable medium accessible by a workflow engine computer system communicating with a network, said network further communicating with at least one patient operated computer and further communicating with at least one physician operated computer, as recited in claim 71;

20 wherein code for generating a second patient medical query message based upon said received educated query message from said first patient and sending said second patient medical query message to a first of said physician extenders

25 further comprises code for determining a routing chain comprised of at least one successor physician extender of a physician extender routing collection comprising each of said physician extenders and embedding said routing chain into said second patient medical query message; and

30 wherein said proposed patient response is routed from said first physician extender to each said successor physician extender belonging to said routing chain until each said successor physician extender has responded to said proposed patient response; and

wherein after each successor physician extender has responded to said proposed patient response to create a collectively proposed patient response

5 message, said collectively patient response message is routed to said first physician.

75. A computer program residing on a computer readable medium accessible by a workflow engine computer system communicating with a network, said network further communicating with at least one patient operated computer and  
10 further communicating with at least one physician operated computer, as recited in claim 70, further comprising;

code for generating a routing tree comprised of at least one routing arrow based upon said received educated query, each of said routing arrows contains a source and a destination belonging to a tree routing collection comprised of at  
15 least each of said physicians, and each of said routing arrows connecting to form a chain containing a final destination of said first physician; and

code for generating a source patient query message for each said source of each said routing arrow of said routing tree containing said chain of said routing arrow and sending said source patient query message to said source of  
20 said routing arrow of said routing tree.

76. A computer program residing on a computer readable medium accessible by a workflow engine computer system communicating with a network, said network further communicating with at least one patient operated computer and further communicating with at least one physician operated computer, as recited  
25 in claim 75;

further comprising code for receiving a partial patient response message from each said source of each said routing arrow and generating a partial patient response log entry in said medical profile of said first patient.

77. A computer program residing on a computer readable medium accessible  
30 by a service-flow engine computer system communicating with a network, said network further communicating with at least one client operated computer and

5 further communicating with at least one service provider operated computer comprising;

code for receiving an educated query message from a first of said clients via said client operated computer and generating a client message log entry in a medical profile of said first client; and

10 code for receiving a client response message from a first of said service providers based upon said educated query message from said first client and generating a service provider response log entry in said medical profile of said first client.

78. A computer program residing on a computer readable medium accessible  
15 by a service-flow engine computer system communicating with a network, said network further communicating with at least one client operated computer and further communicating with at least one service provider operated computer, as recited in claim 77 further comprising;

code for generating a first client medical query message based upon  
20 received said educated query message from said first client and sending said first client medical query message to said first service provider.

79. A computer program residing on a computer readable medium accessible  
by a service-flow engine computer system communicating with a network, said network further communicating with at least one client operated computer and  
25 further communicating with at least one service provider operated computer, as recited in claim 78;

wherein code for generating a first client medical query message based upon said received educated query message from said first client and sending said first client medical query message to said first service provider further  
30 comprises

code for determining said first service provider based upon said received educated query message from said first client.



5 80. A computer program residing on a computer readable medium accessible by a service-flow engine computer system communicating with a network, said network further communicating with at least one client operated computer and further communicating with at least one service provider operated computer, as recited in claim 79, further comprises;

10 code for determining if said received client response message contains an embedded prescription;

code for receiving a client prescription order message from said first client; and

code for generating a prescription order message based upon said  
15 received client prescription order message and said received client response message and for sending said prescription order message to a first pharmacy

whenever said received client response message contains said embedded prescription; and

whenever said received client prescription order message is compatible  
20 with said embedded prescription contained in said received client response message; and

whenever said received client prescription order message authorizes sending said prescription order message to said first pharmacy.

81. A computer program residing on a computer readable medium accessible  
25 by a service-flow engine computer system communicating with a network, said network further communicating with at least one client operated computer and further communicating with at least one service provider operated computer, as recited in claim 80;

wherein said network further communicates with at least one service  
30 extender operated computer; and

further comprising code for generating a second client medical query message based upon said received educated query message from said first

5 client and sending said second client medical query message to a first of said service extenders operated computer.

82. A computer program residing on a computer readable medium accessible by a service-flow engine computer system communicating with a network, said network further communicating with at least one client operated computer and  
10 further communicating with at least one service provider operated computer, as recited in claim 81;

wherein code for generating a second client medical query message based upon said received educated query message from said first client and sending said second client medical query message to a first of said service  
15 extenders further comprises

code for determining said first service extender based upon said received educated query message from said first client.

83. A computer program residing on a computer readable medium accessible by a service-flow engine computer system communicating with a network, said  
20 network further communicating with at least one client operated computer and further communicating with at least one service provider operated computer, as recited in claim 81;

further comprising code for receiving a proposed first client response message from said first service extender via said service extender operated  
25 computer and generating a proposed first response log entry from said received proposed first client response message in said medical profile of said first client.

84. A computer program residing on a computer readable medium accessible by a service-flow engine computer system communicating with a network, said network further communicating with at least one client operated computer and  
30 further communicating with at least one service provider operated computer, as recited in claim 81;

5 wherein code for generating a second client medical query message based upon said received educated query message from said first client and sending said second client medical query message to a first of said service extenders

further comprises code for determining a routing chain comprised of at  
10 least one successor service extender of a service extender routing collection comprising each of said service extenders and embedding said routing chain into said second client medical query message; and

wherein said proposed client response is routed from said first service extender to each said successor service extender belonging to said routing chain  
15 until each said successor service extender has responded to said proposed client response; and

wherein after each successor service extender has responded to said proposed client response to create a collectively proposed client response message, said collectively client response message is routed to said first service  
20 provider.

85. A computer program residing on a computer readable medium accessible by a service-flow engine computer system communicating with a network, said network further communicating with at least one client operated computer and further communicating with at least one service provider operated computer, as  
25 recited in claim 80, further comprising;

code for generating a routing tree comprised of at least one routing arrow based upon said received educated query, each of said routing arrows contains a source and a destination belonging to a tree routing collection comprised of at least each of said service providers, and each of said routing arrows connecting  
30 to form a chain containing a final destination of said first service provider; and

code for generating a source client query message for each said source of each said routing arrow of said routing tree containing said chain of said routing

5 arrow and sending said source client query message to said source of said routing arrow of said routing tree.

86. A computer program residing on a computer readable medium accessible by a service-flow engine computer system communicating with a network, said network further communicating with at least one client operated computer and  
10 further communicating with at least one service provider operated computer, as recited in claim 85;

further comprising code for receiving a partial client response message from each said source of each said routing arrow and generating a partial client response log entry in said medical profile of said first client.

## **A MESSAGE AND PROGRAM SYSTEM SUPPORTING COMMUNICATION**

### **Abstract**

One aspect of this invention embodies a method of messaging upon a network involving at least one physician, at least one patient and a workflow engine. Each physician operates a computer from time to time capable of receiving and sending messages upon the network at a corresponding address on the network.  
20 Each patient operates a computer from time to time capable of receiving and sending messages upon the network at a corresponding address on the network. The workflow engine accesses the network for receiving and sending messages upon the network at a workflow engine address on the network. The method comprises using a first medical message wizard by the patient on the patient  
25 operated computer, a medical profiler process performed by the workflow engine and a second medical message wizard by the first physician on the physician operated computer at the first corresponding physician address. Another aspect of this invention embodies a method of messaging upon a network involving at  
30

- 5 least one service provider, at least one client and a service-flow engine. Each service provider operates a computer from time to time capable of receiving and sending messages upon the network at a corresponding address on the network. Each client operates a computer from time to time capable of receiving and sending messages upon the network at a corresponding address on the network.
- 10 The service-flow engine accesses the network for receiving and sending messages upon the network at a service-flow engine address on the network. The method comprises using a first service message interface by the client on the client operated computer, a service profiler process performed by the service-flow engine and a second service message interface by the first service provider
- 15 on the service provider operated computer at the first corresponding service provider address.

HEAL0001

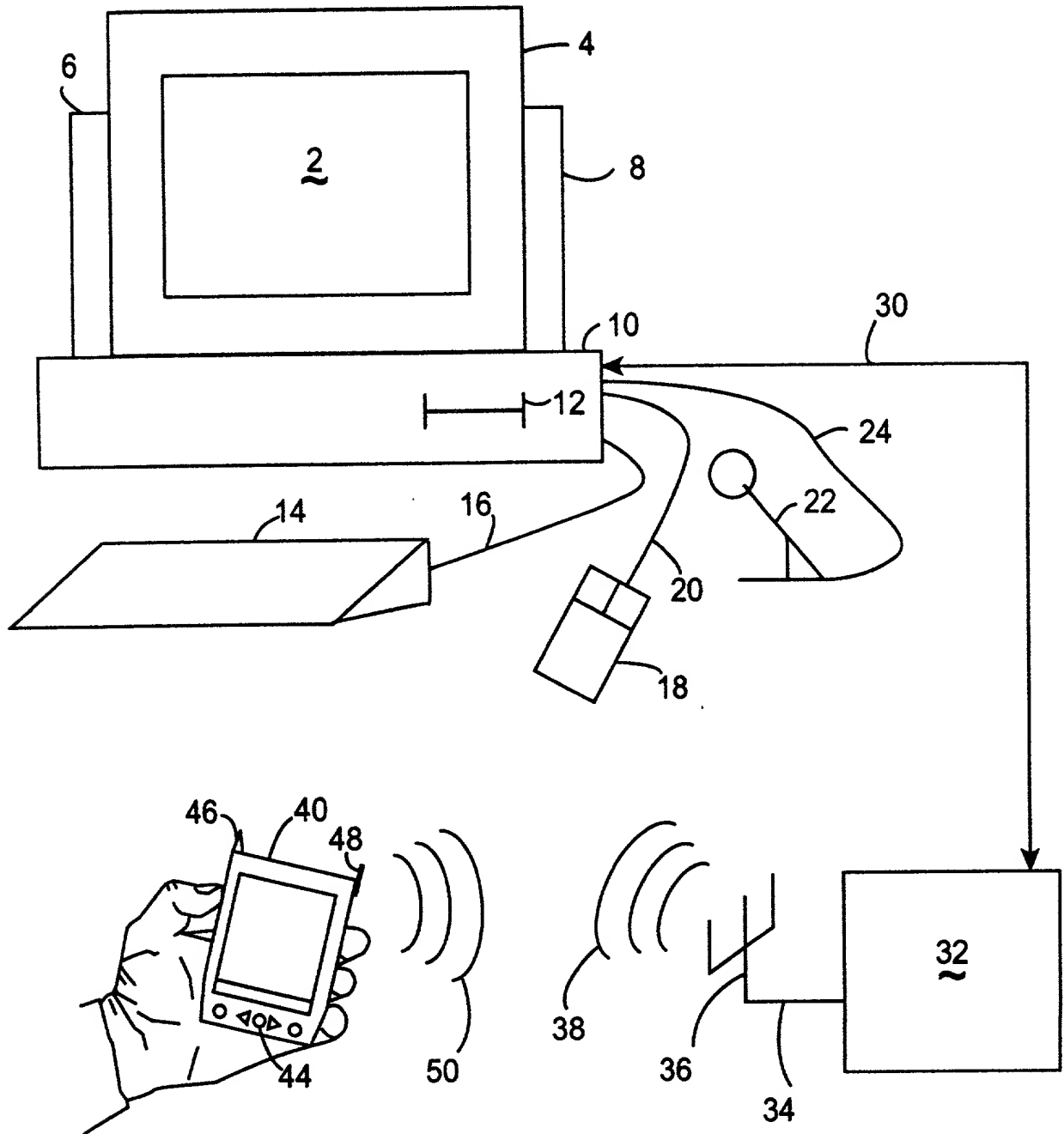


Fig. 1  
Prior Art

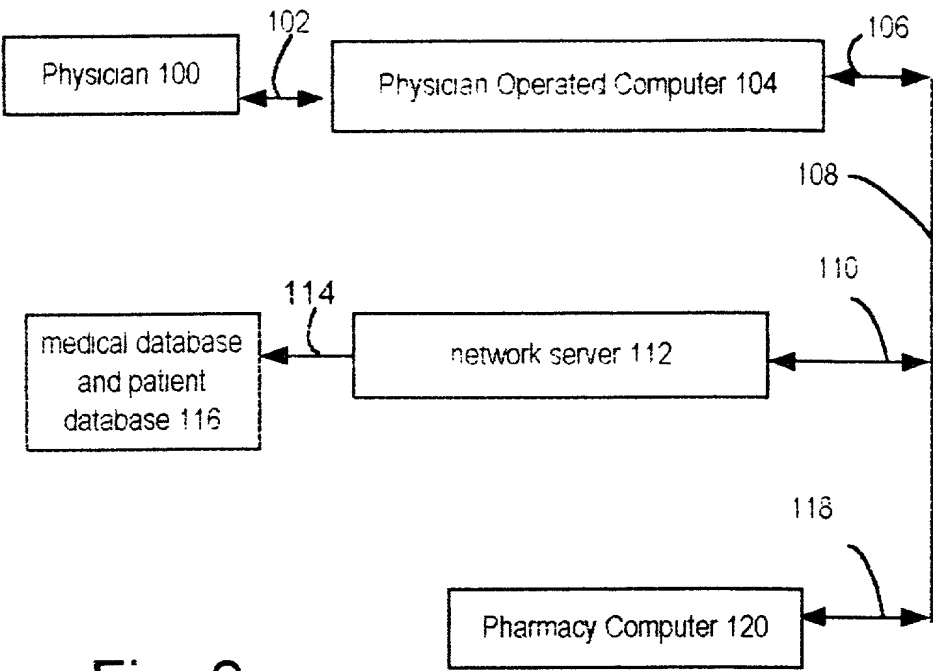


Fig. 2  
Prior Art

HEAL0001

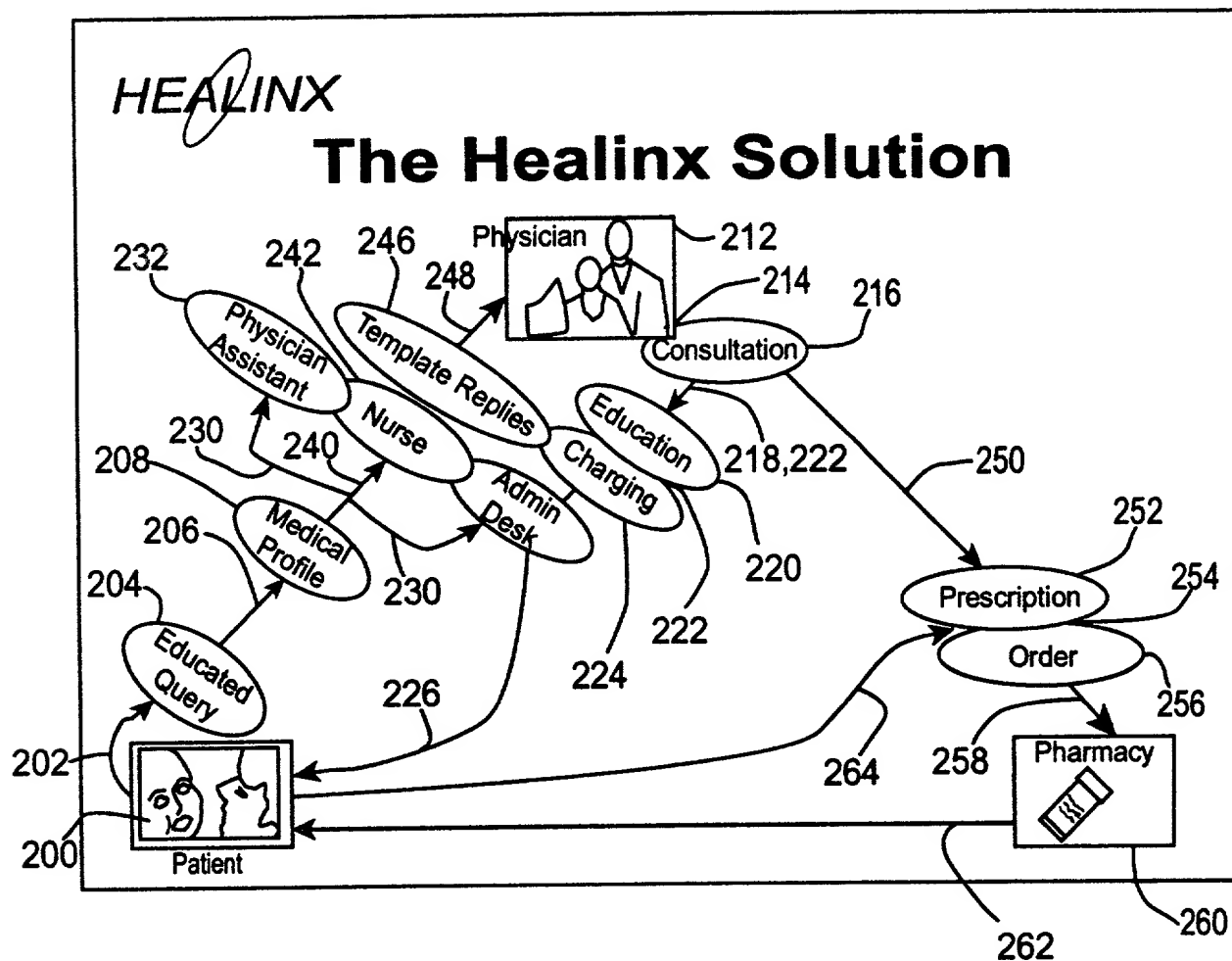


Fig. 3A



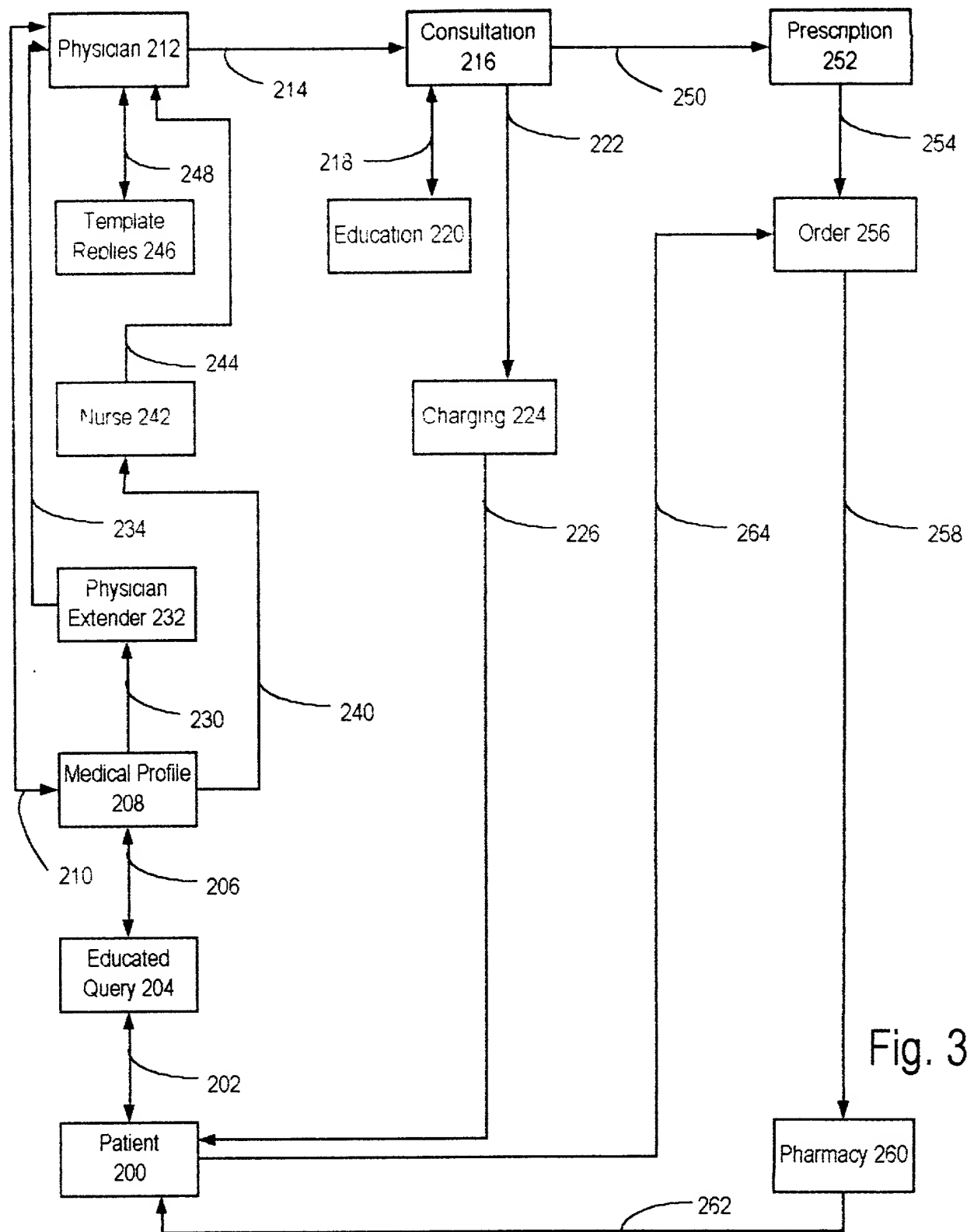


Fig. 3B

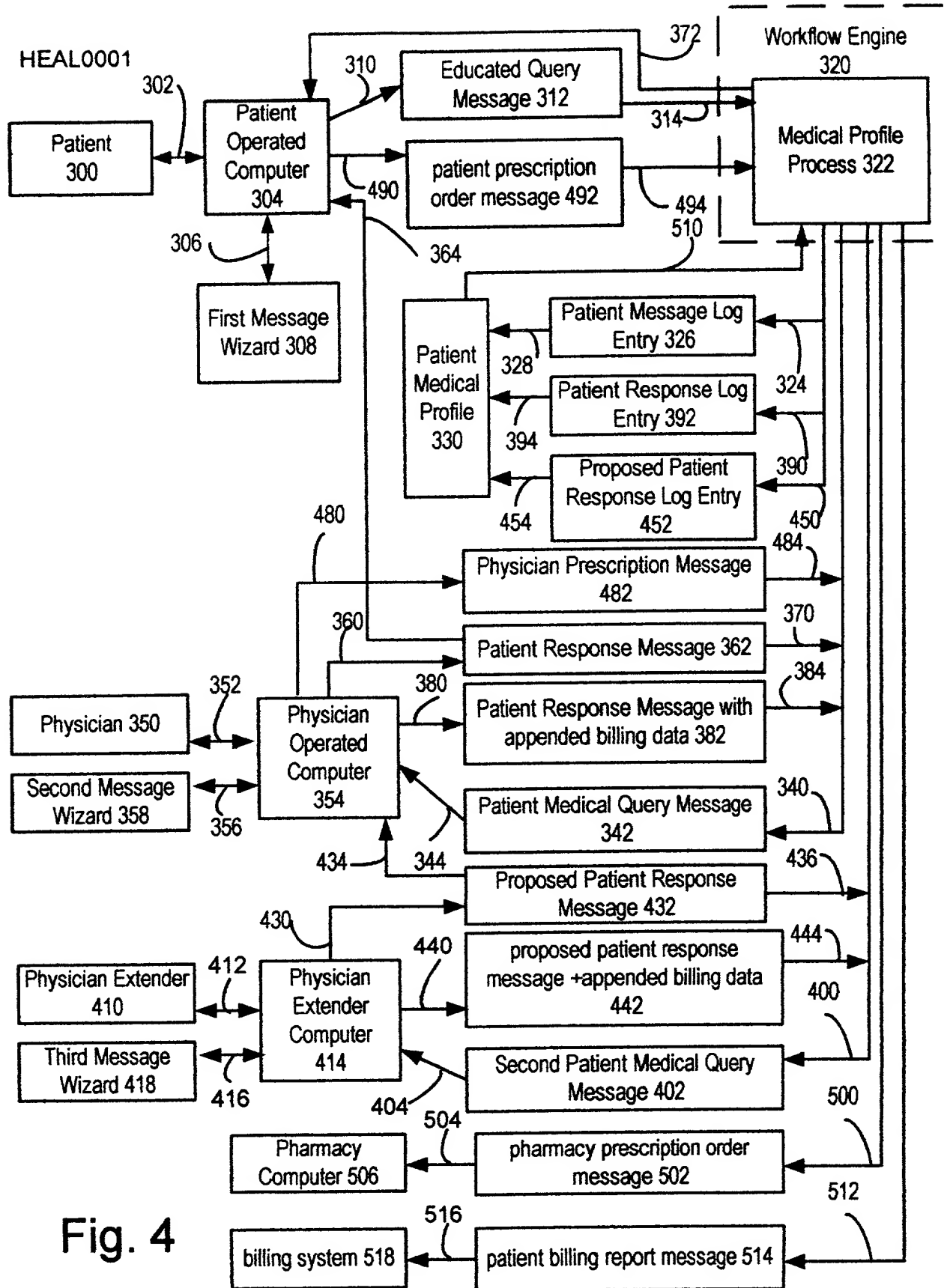


Fig. 4

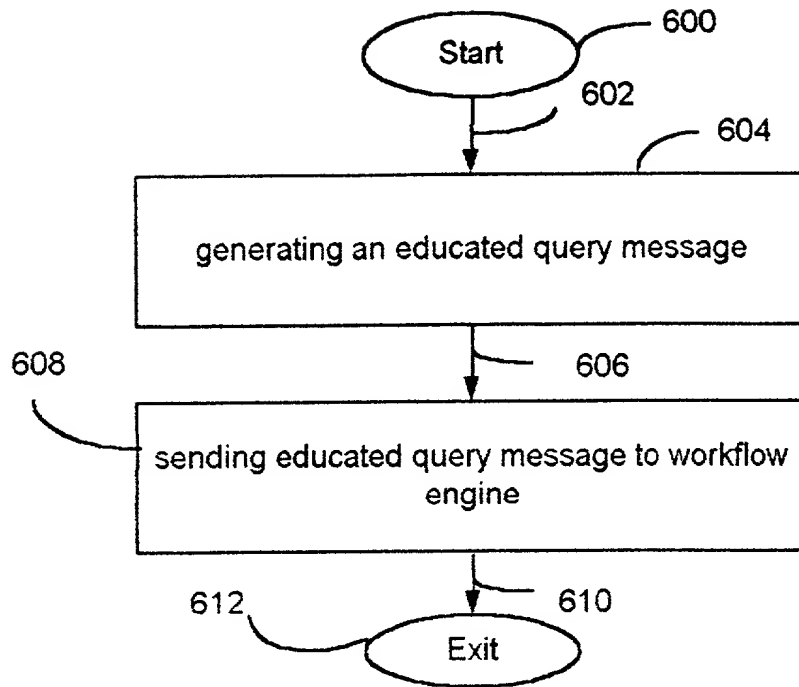


Fig. 5

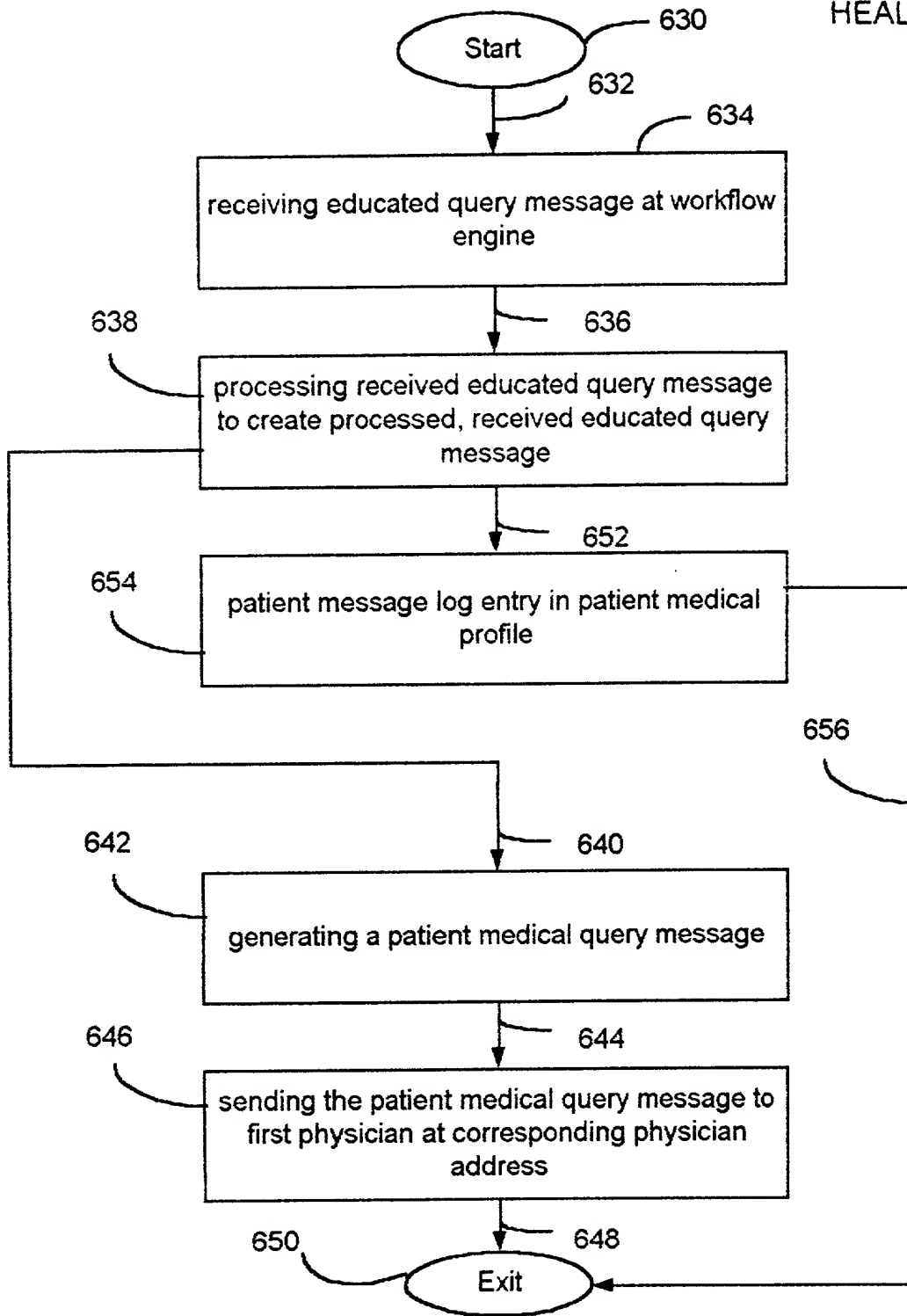


Fig. 6

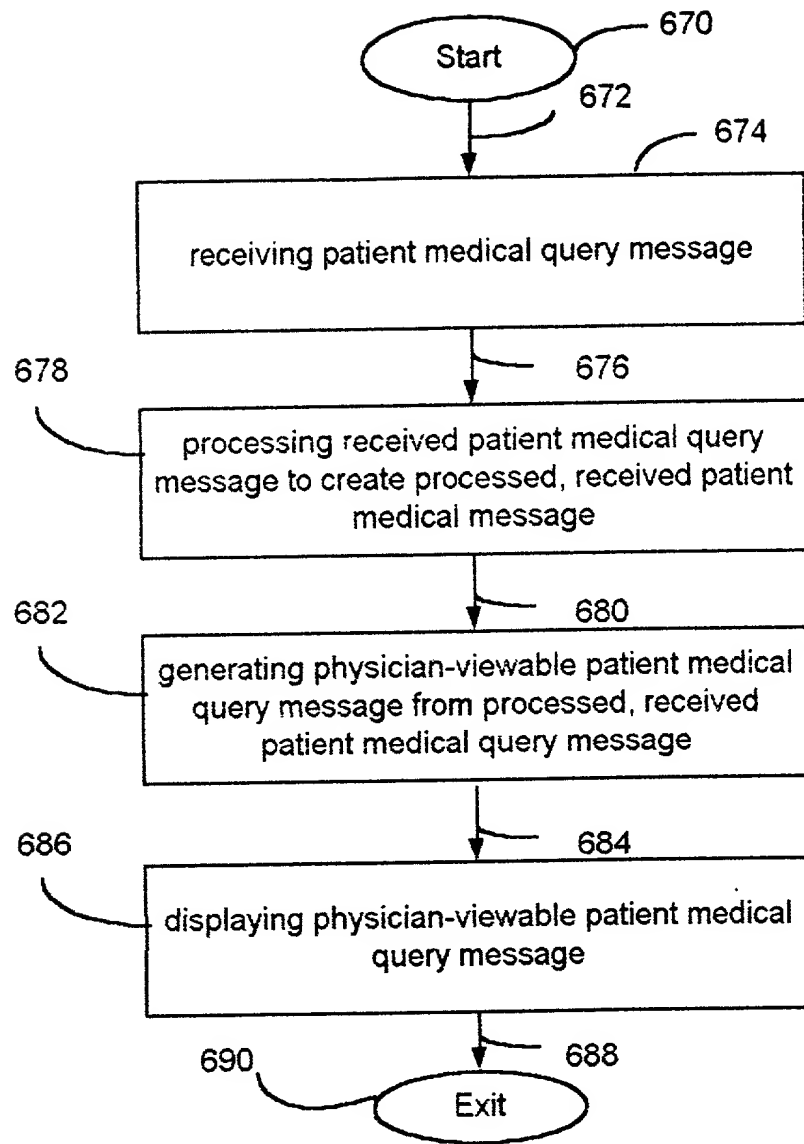


Fig. 7

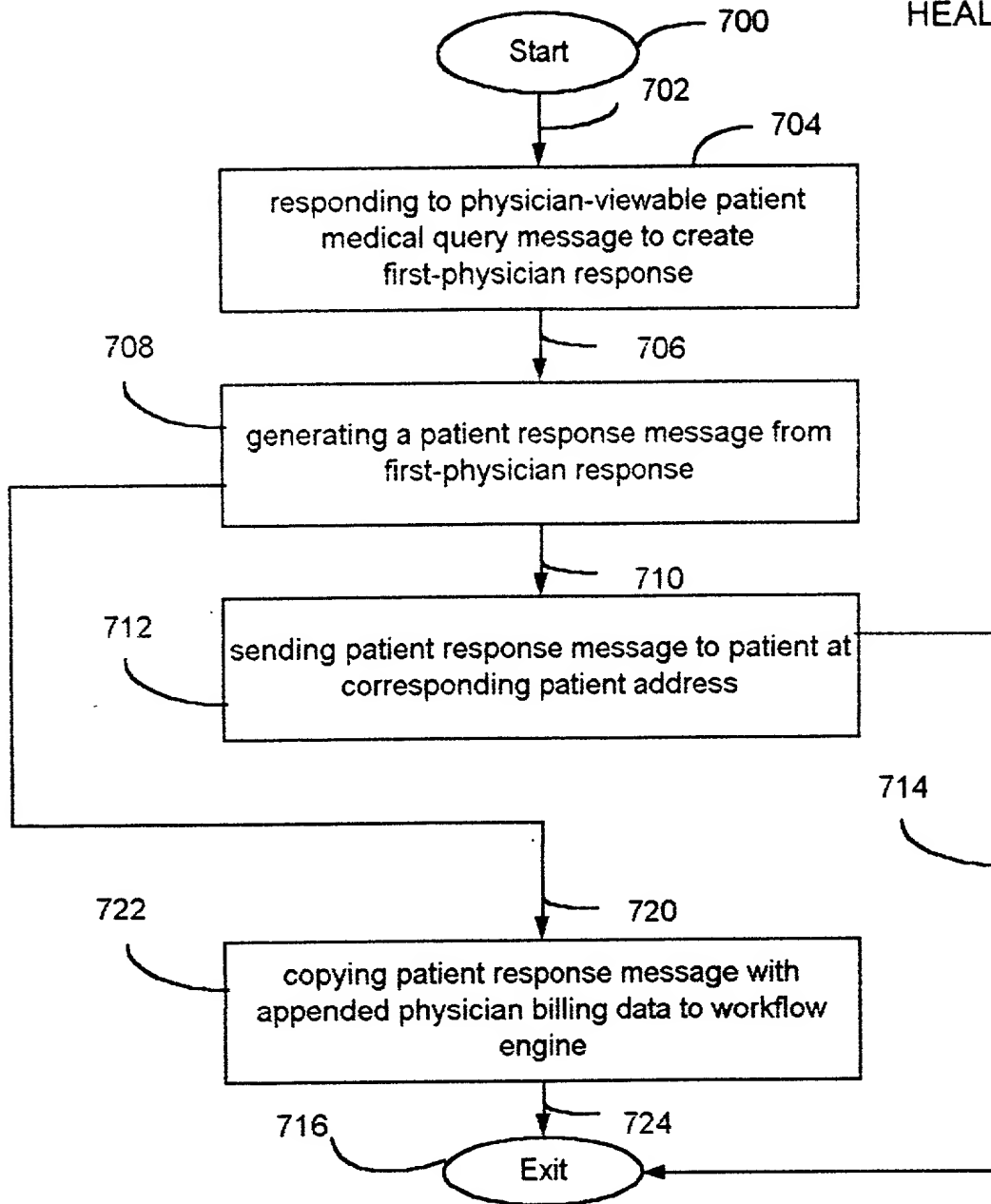


Fig. 8

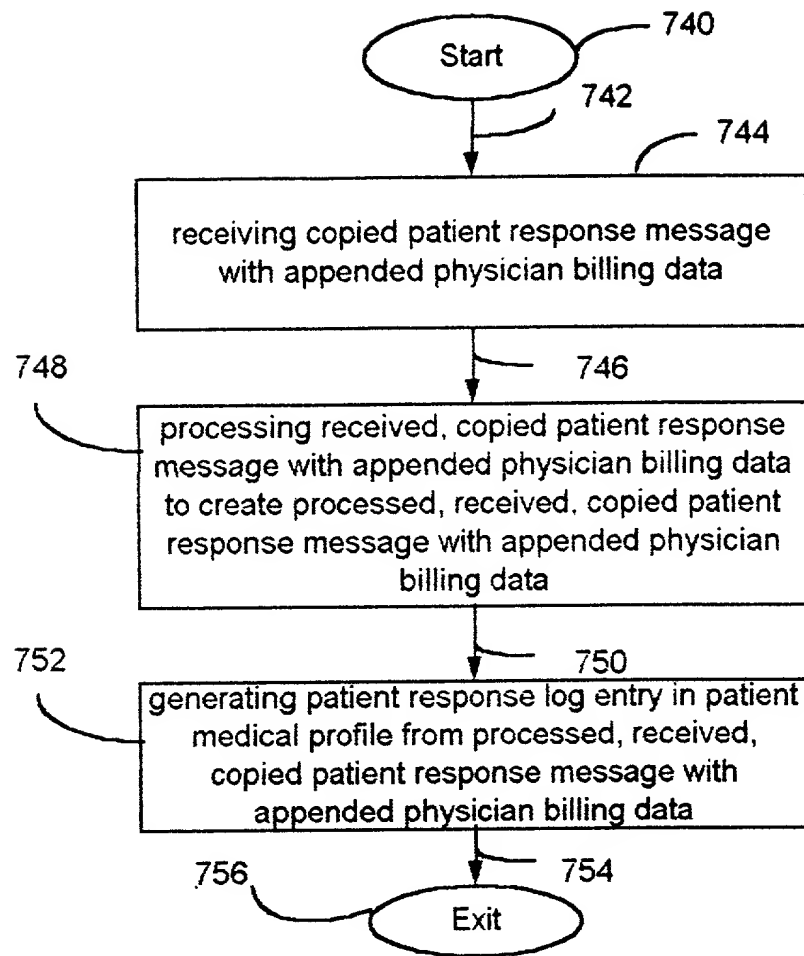


Fig. 9

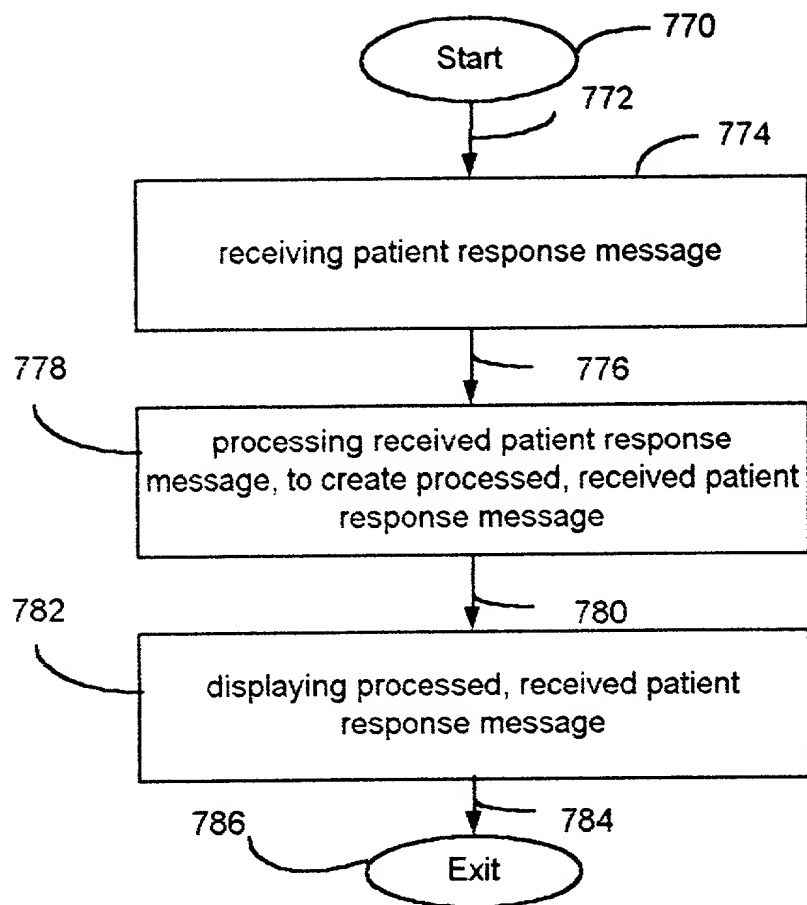


Fig. 10



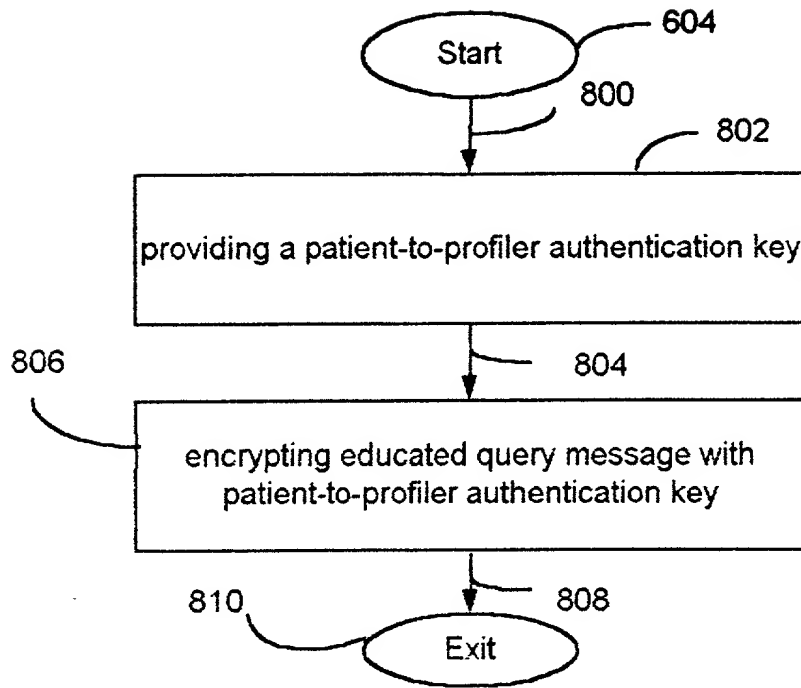


Fig. 11

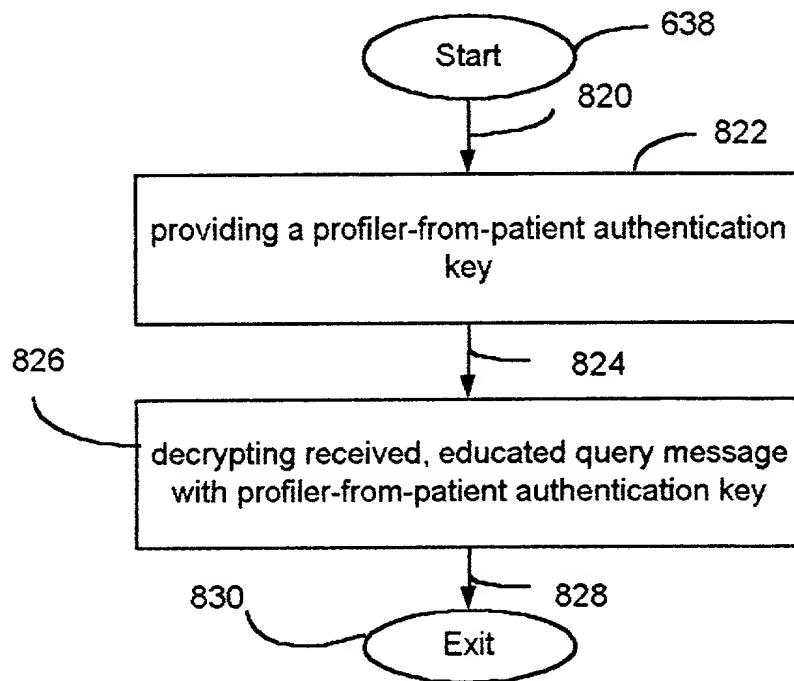


Fig. 12

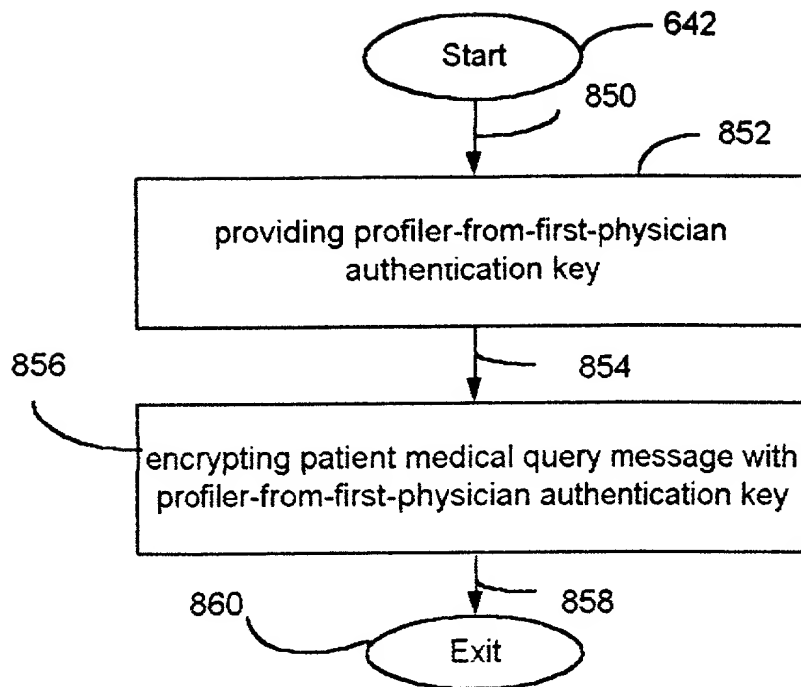


Fig. 13.

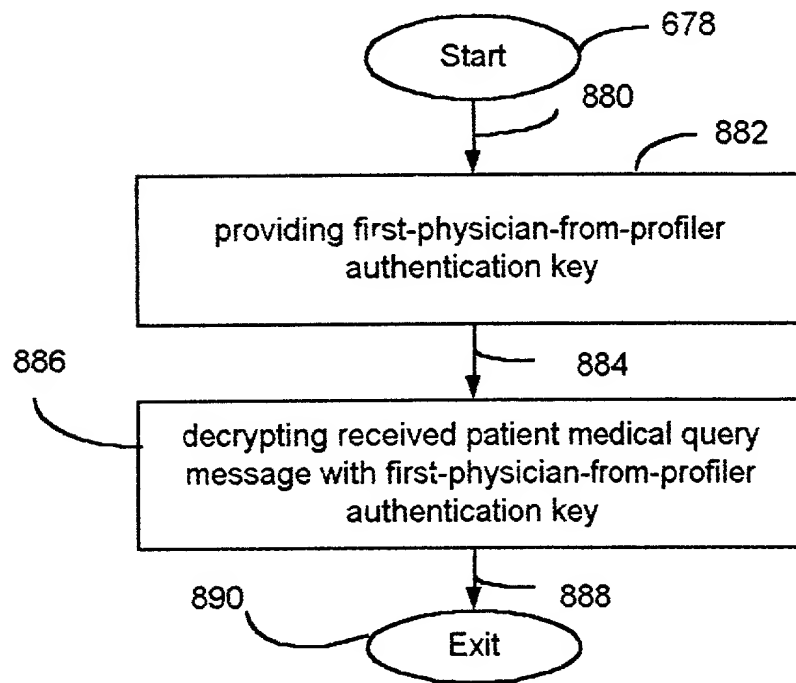


Fig. 14

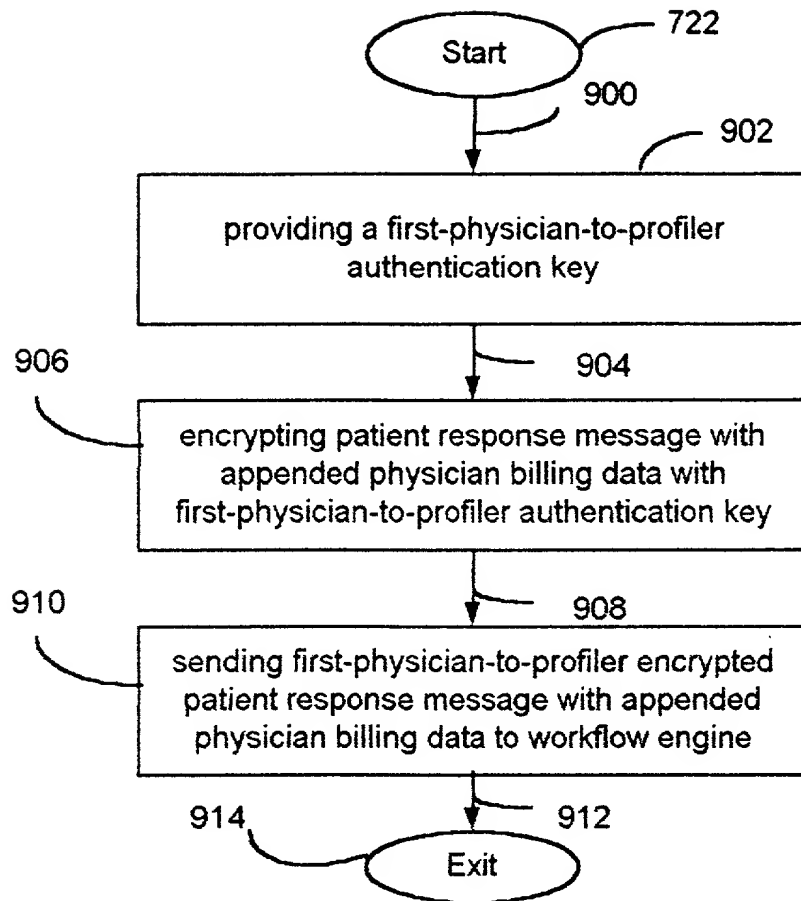


Fig. 15

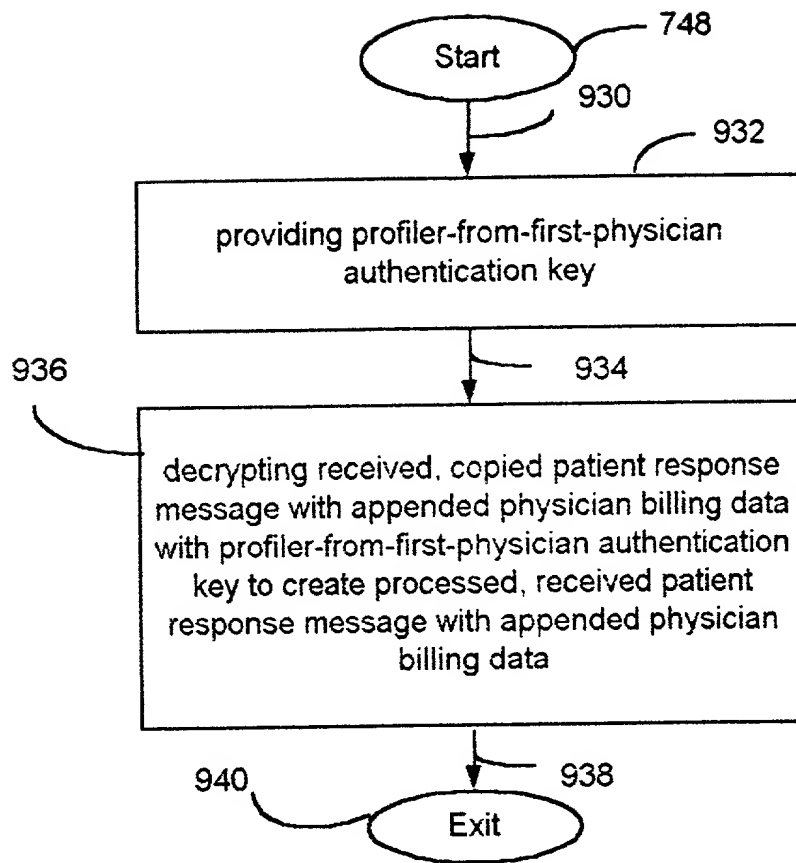


Fig. 16

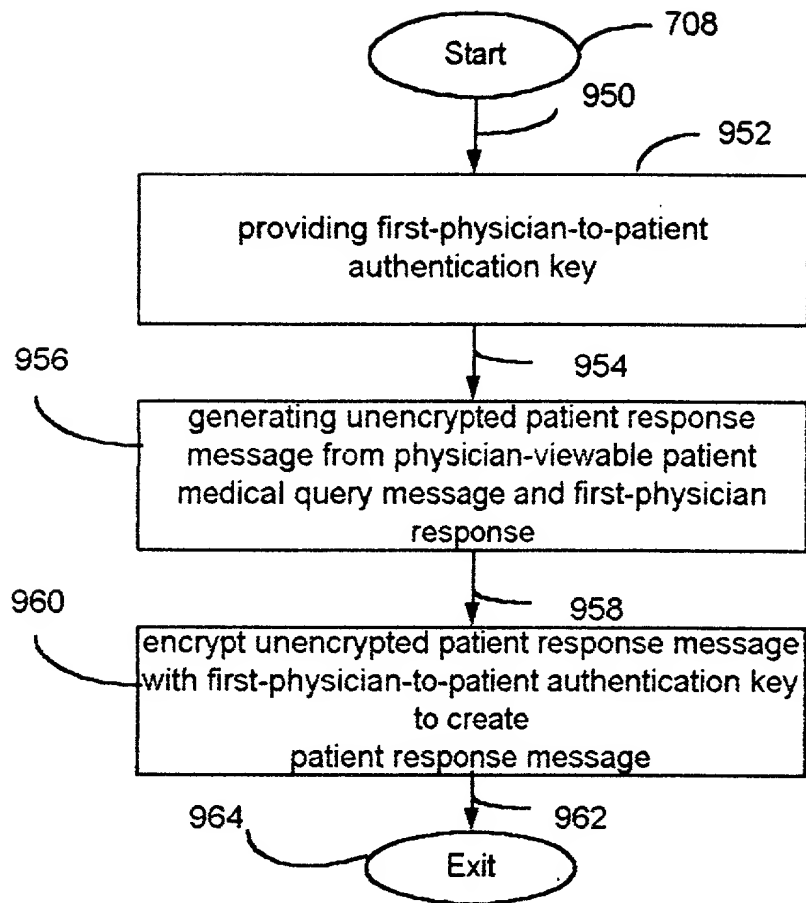


Fig. 17

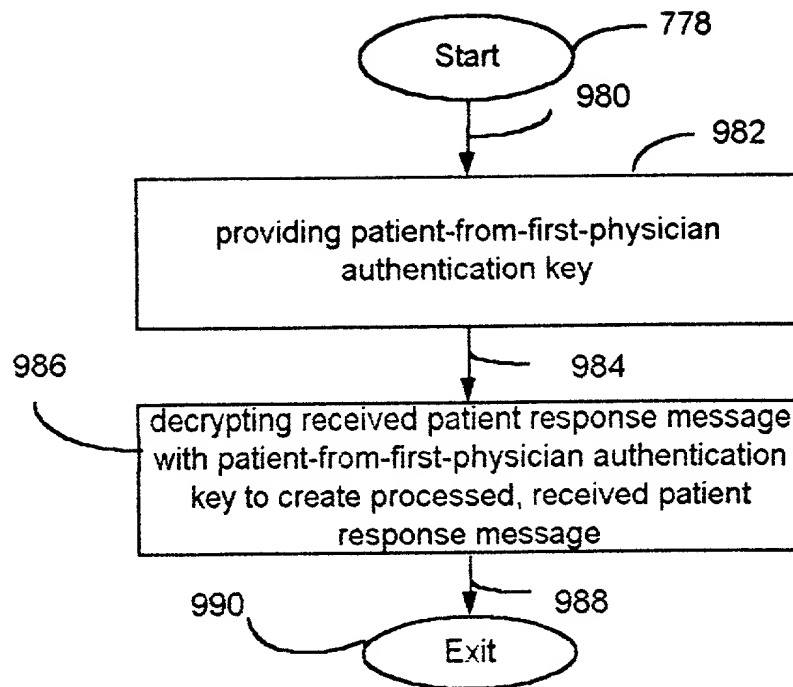


Fig. 18

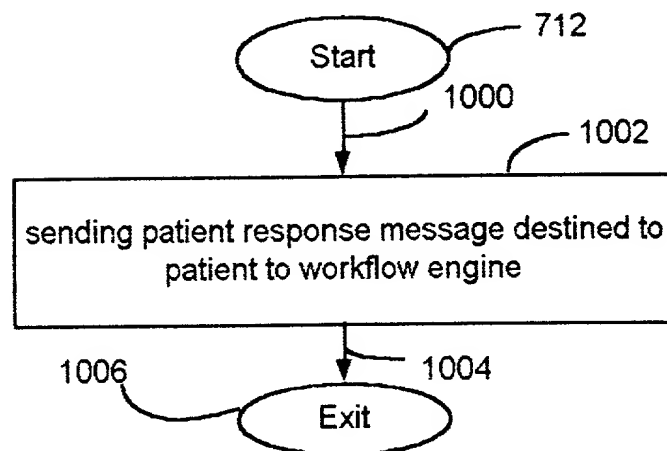


Fig. 19

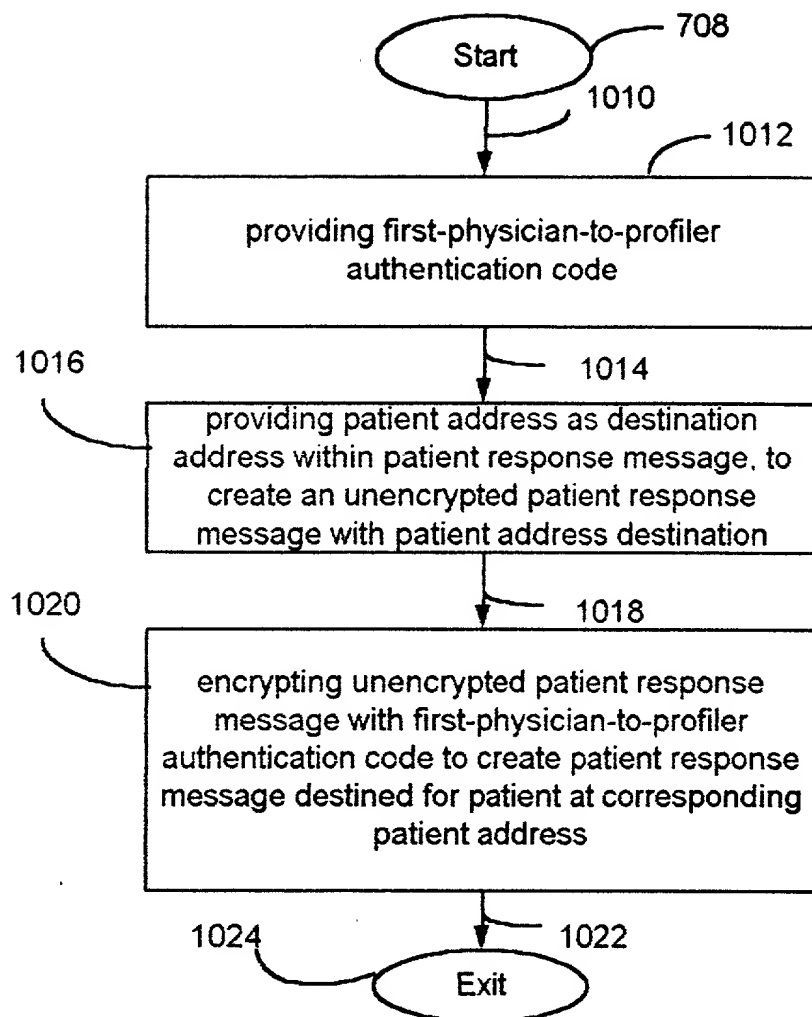


Fig. 20

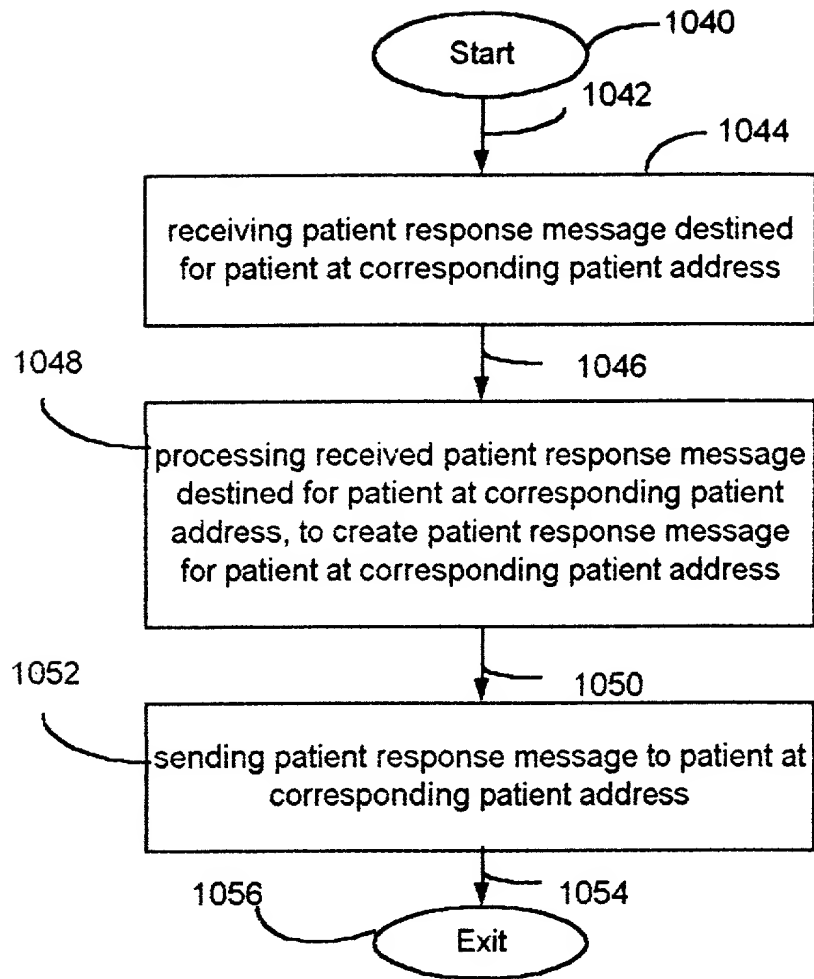


Fig. 21



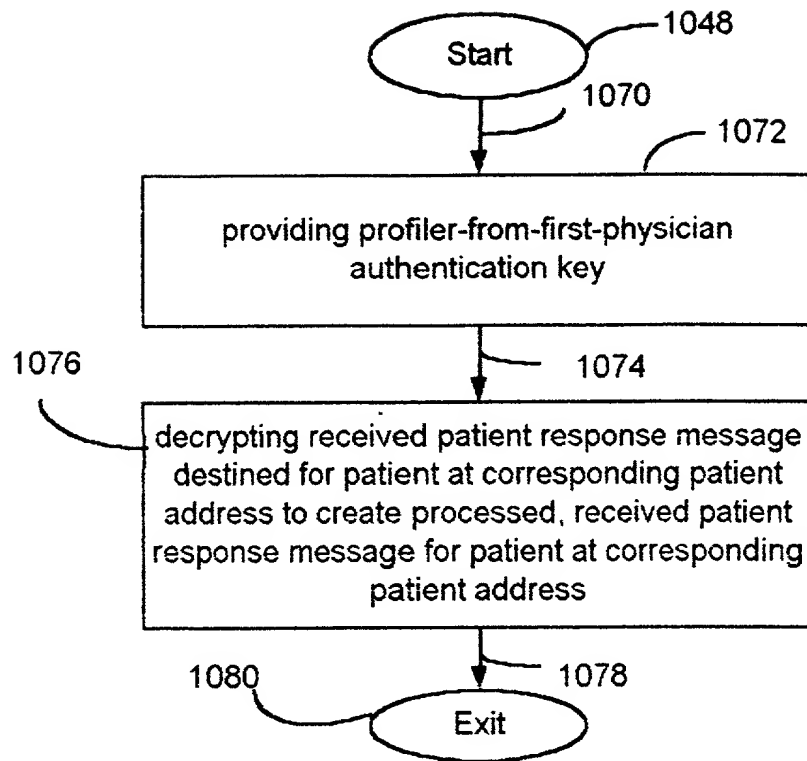


Fig. 22

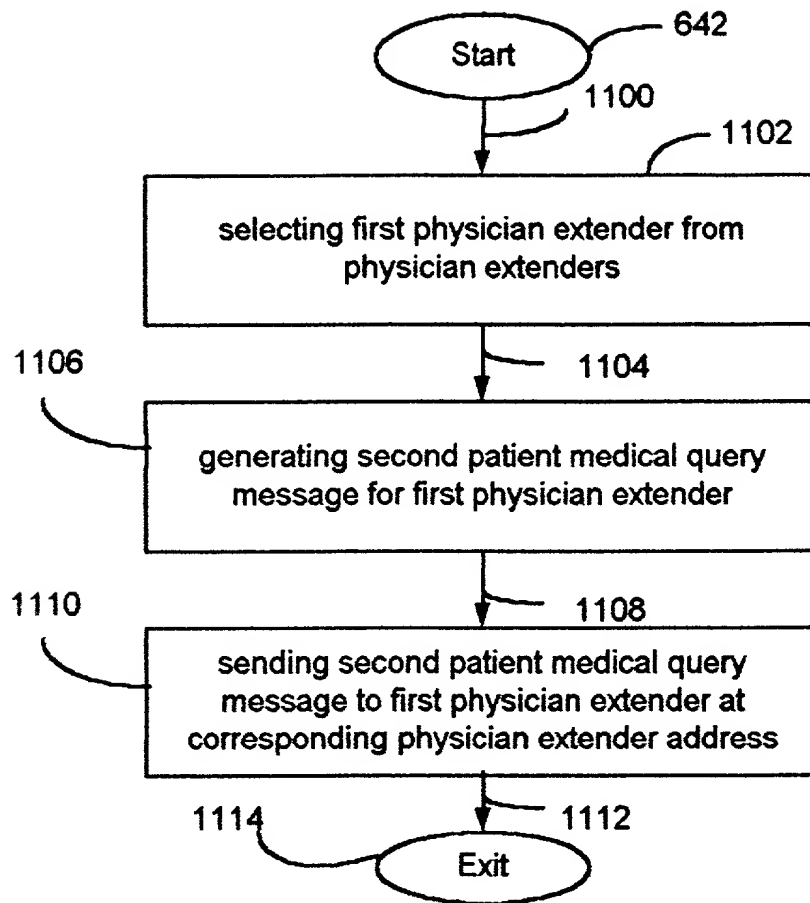
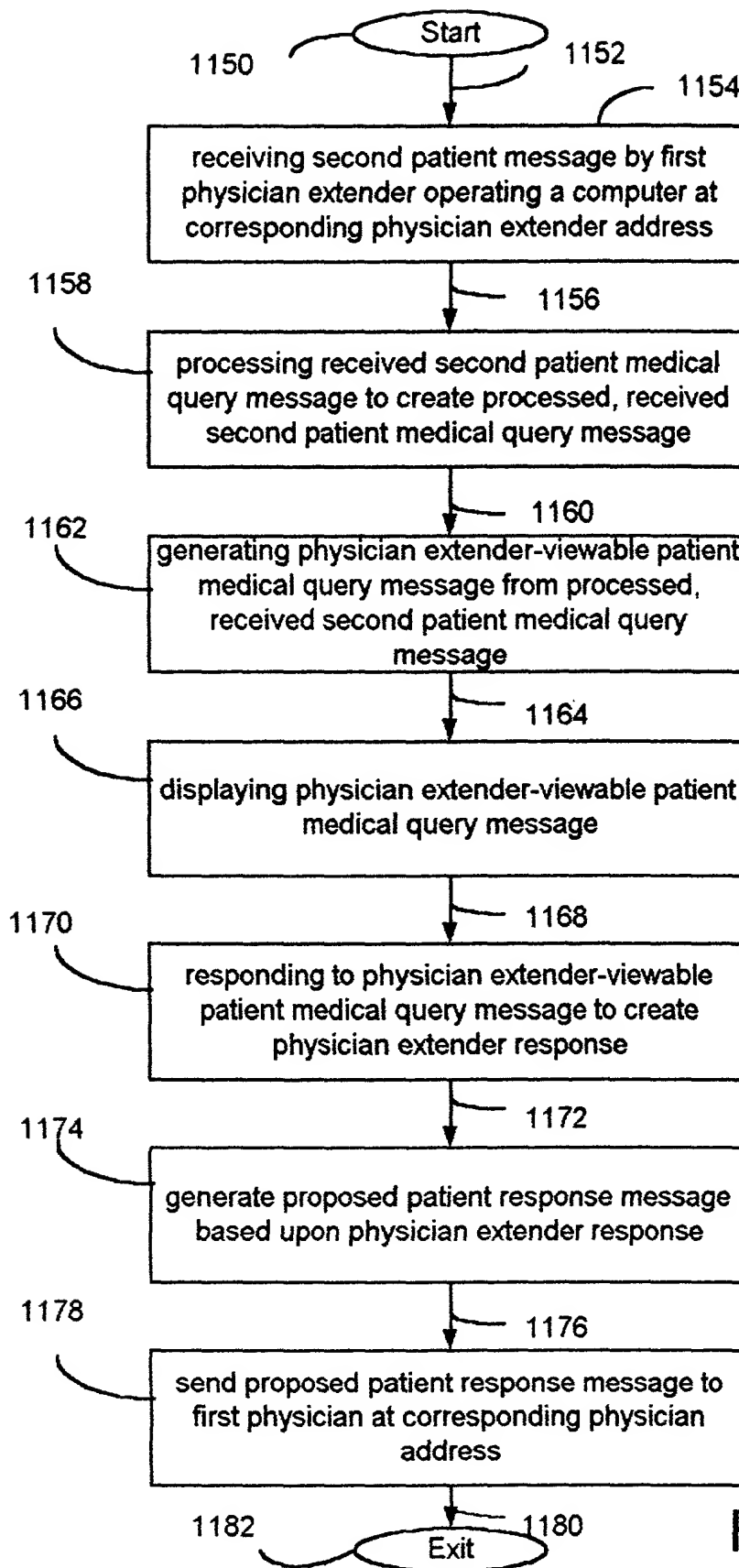


Fig. 23



HEAL0001

Fig. 24

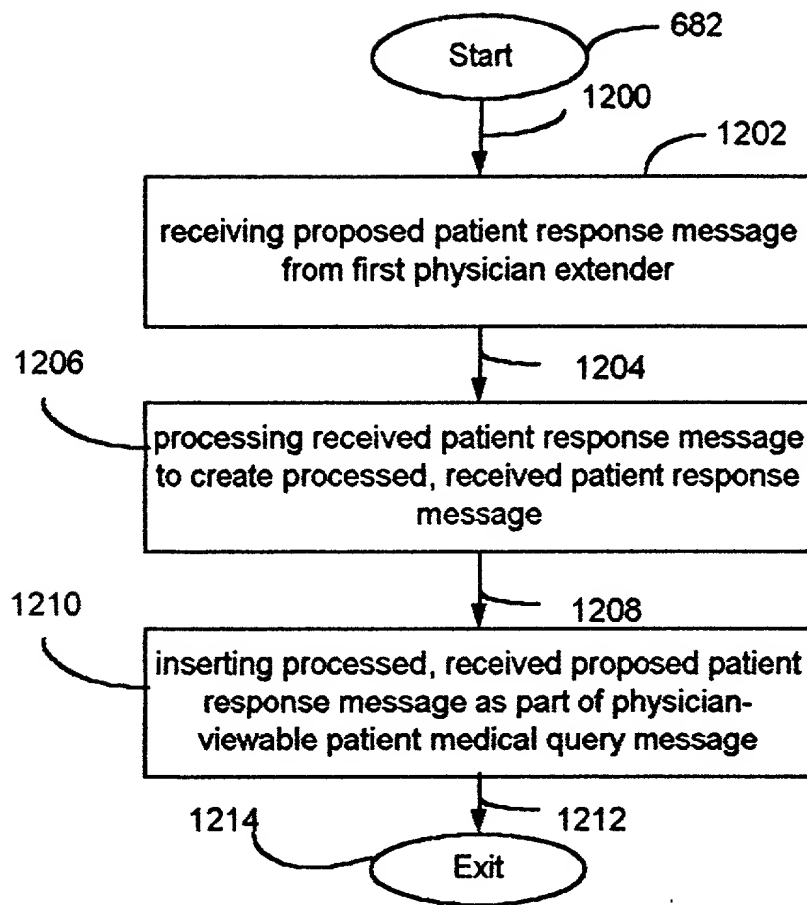


Fig. 25

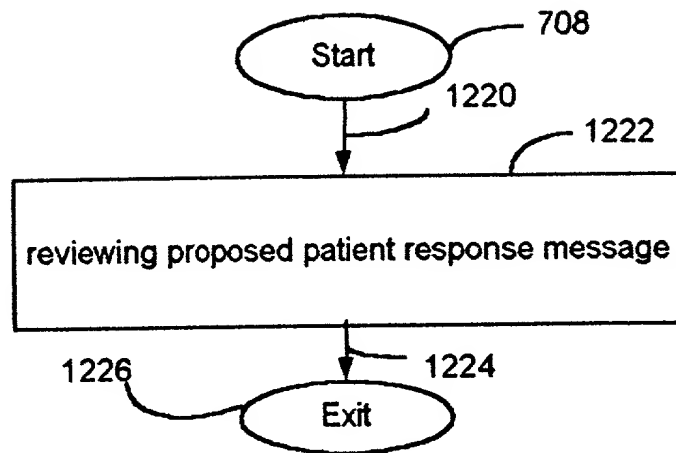


Fig. 26

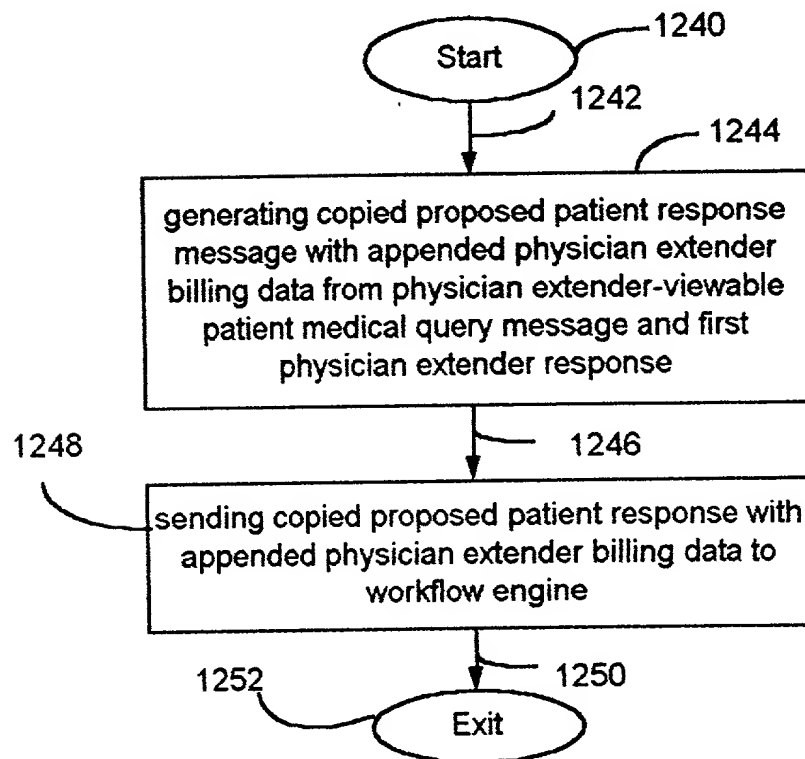


Fig. 27

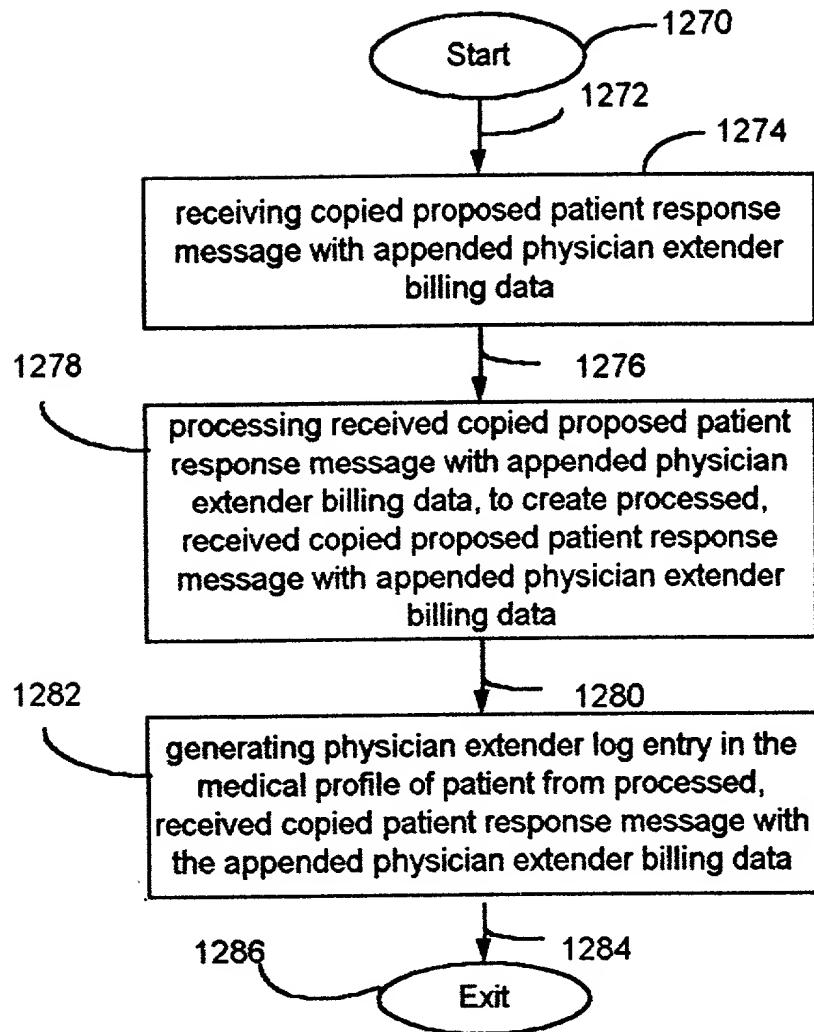


Fig. 28

HEAL0001

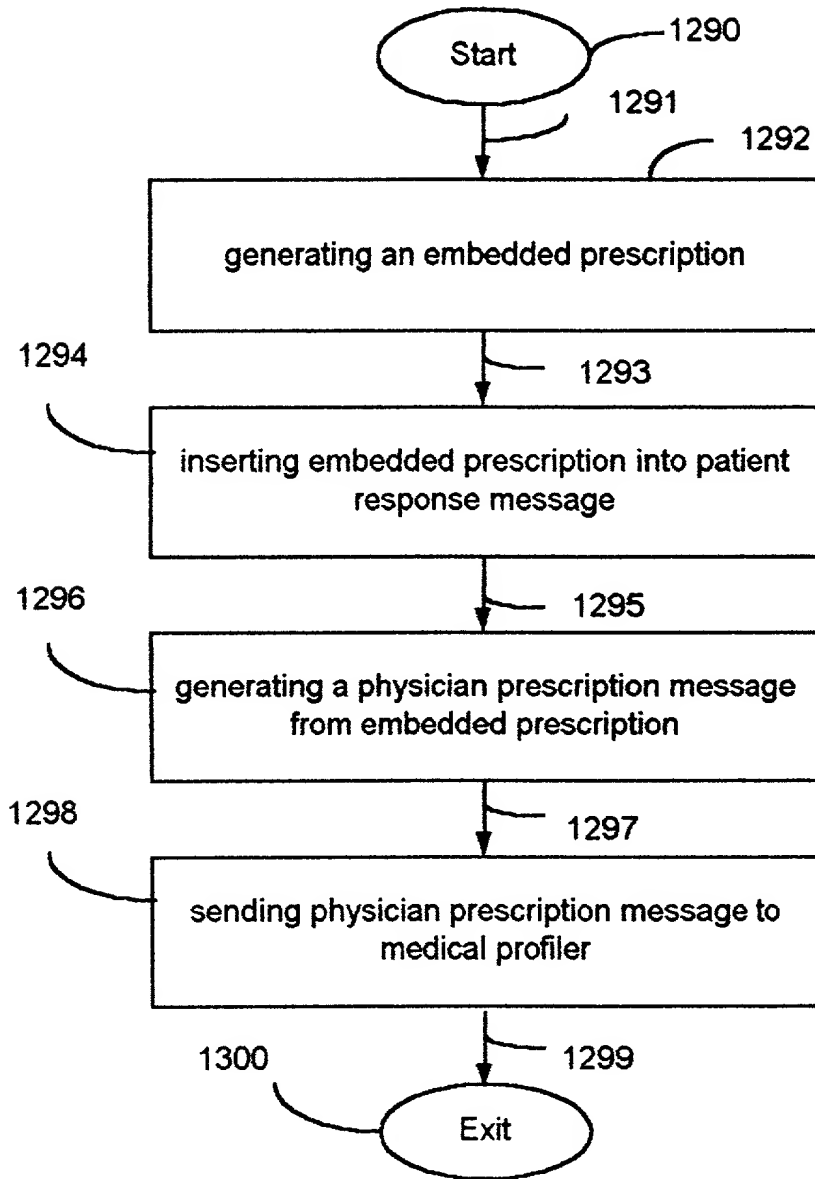


Fig. 29

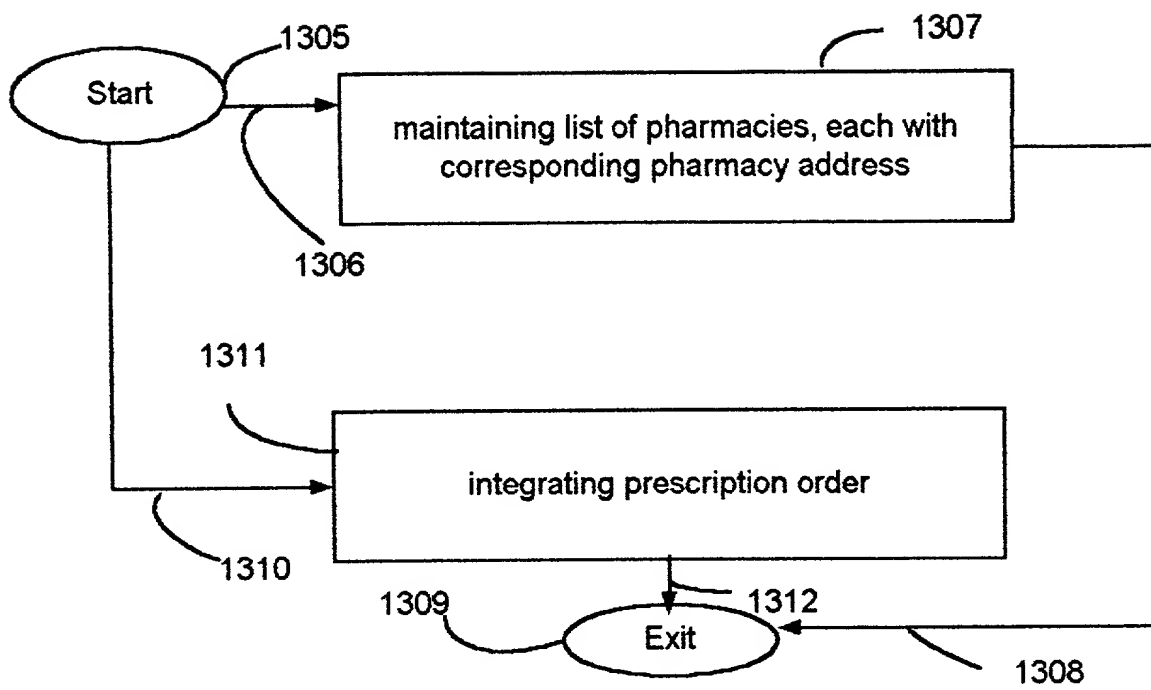


Fig. 30



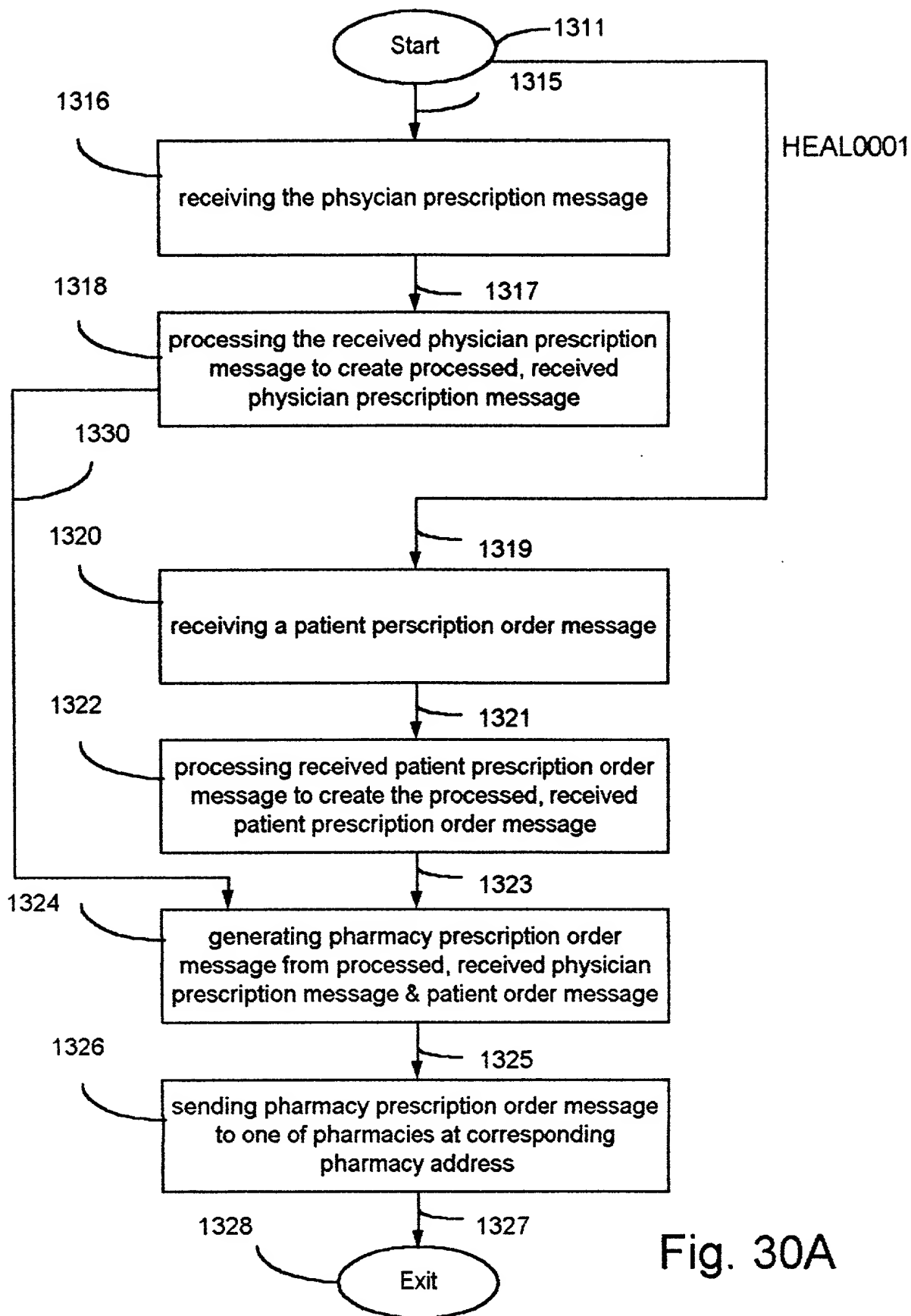


Fig. 30A

HEAL001

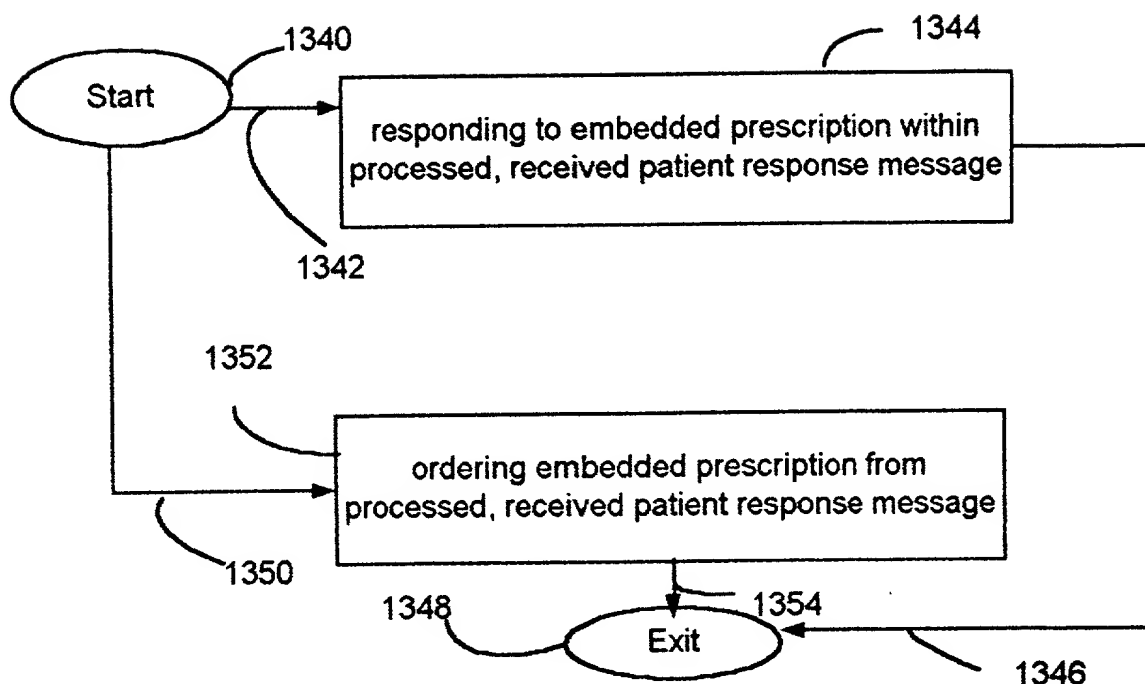


Fig. 31

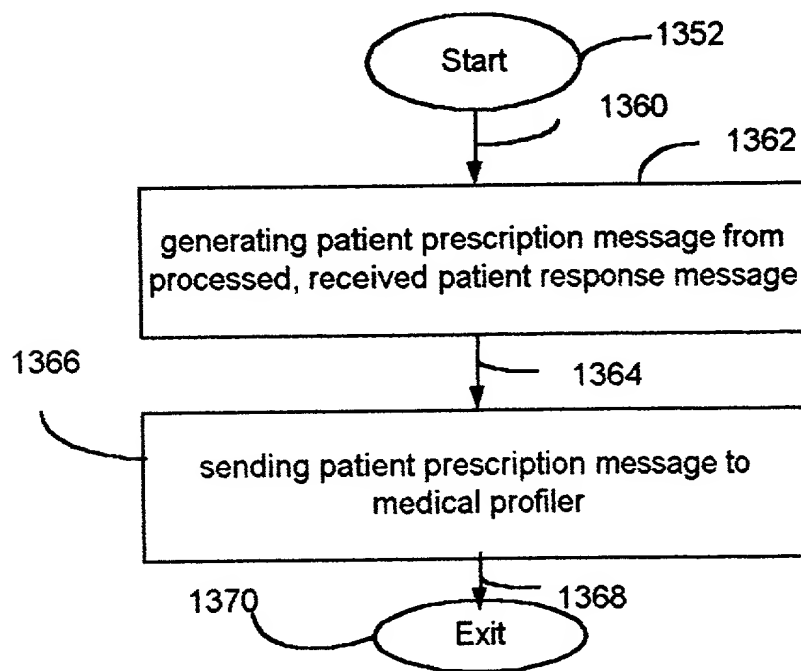


Fig. 32

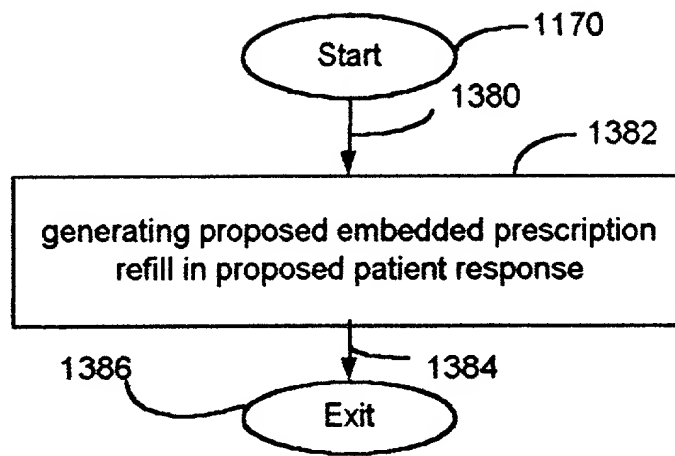


Fig. 33

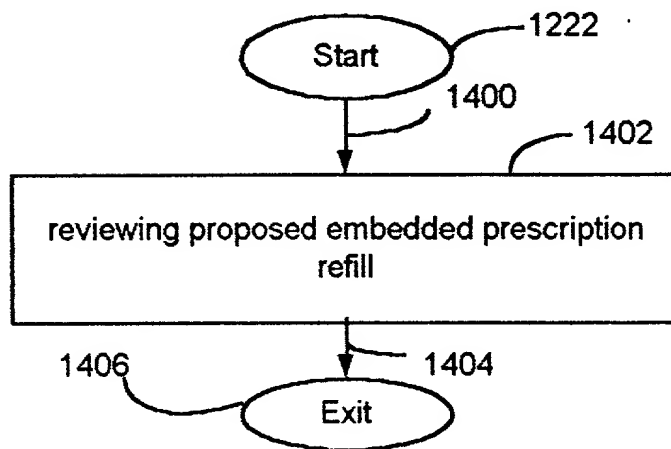


Fig. 34

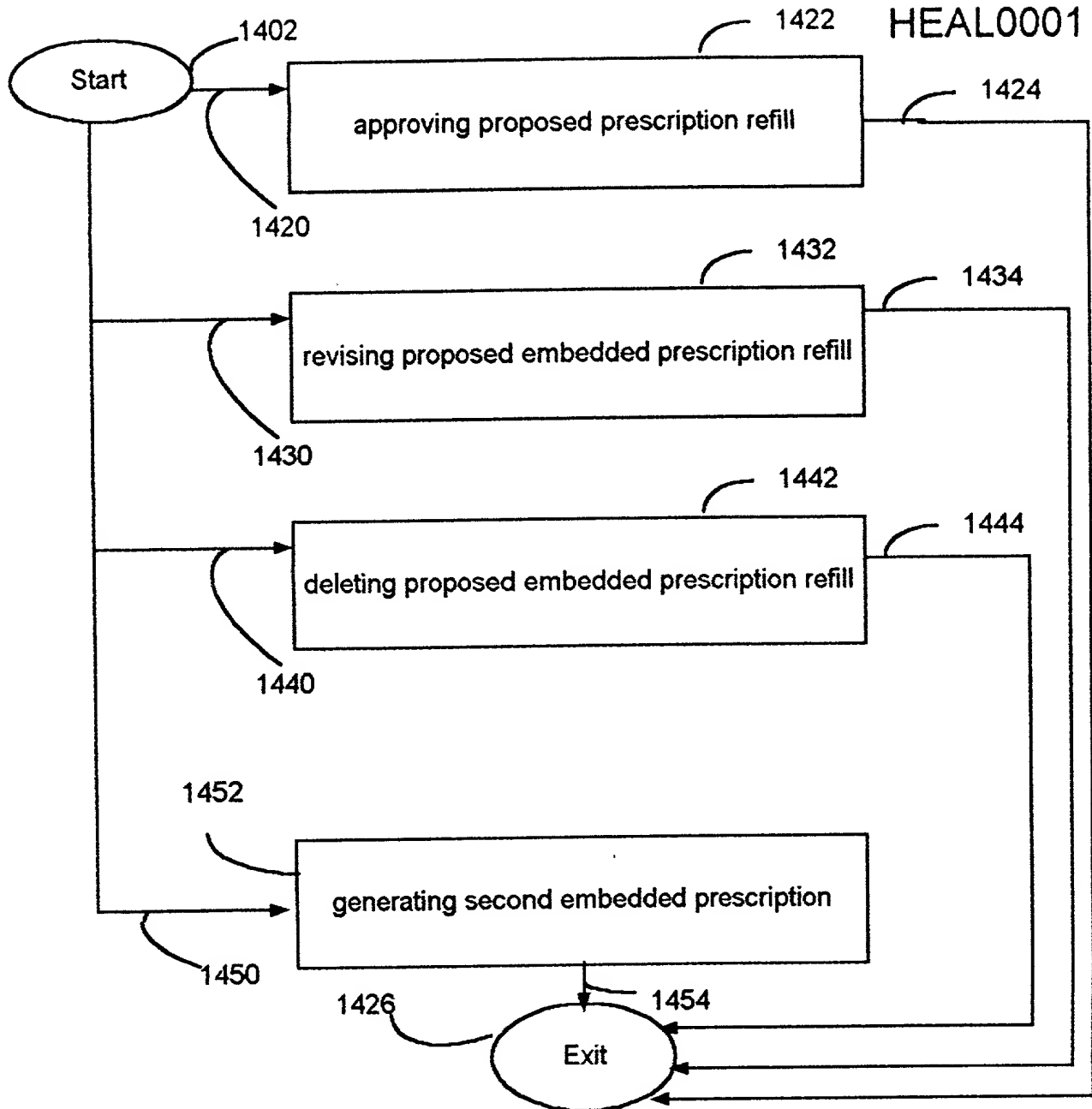


Fig. 35

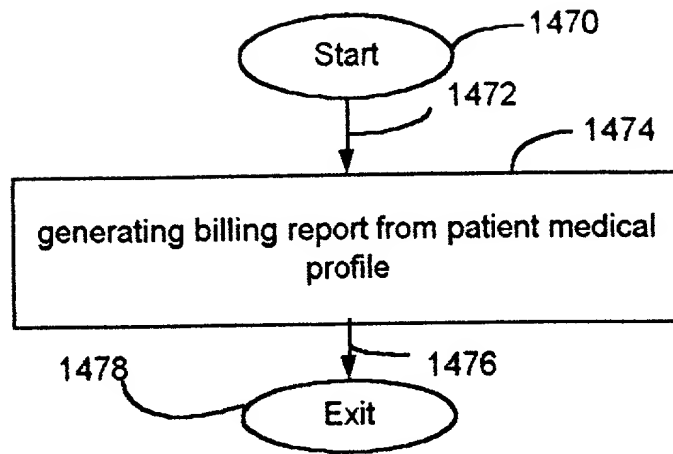


Fig. 36

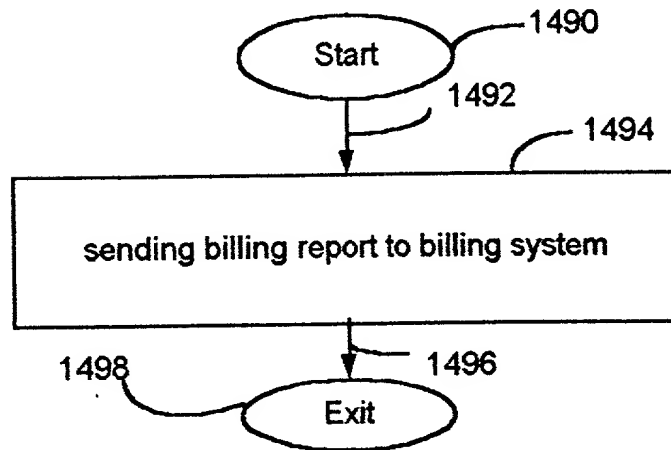


Fig. 37

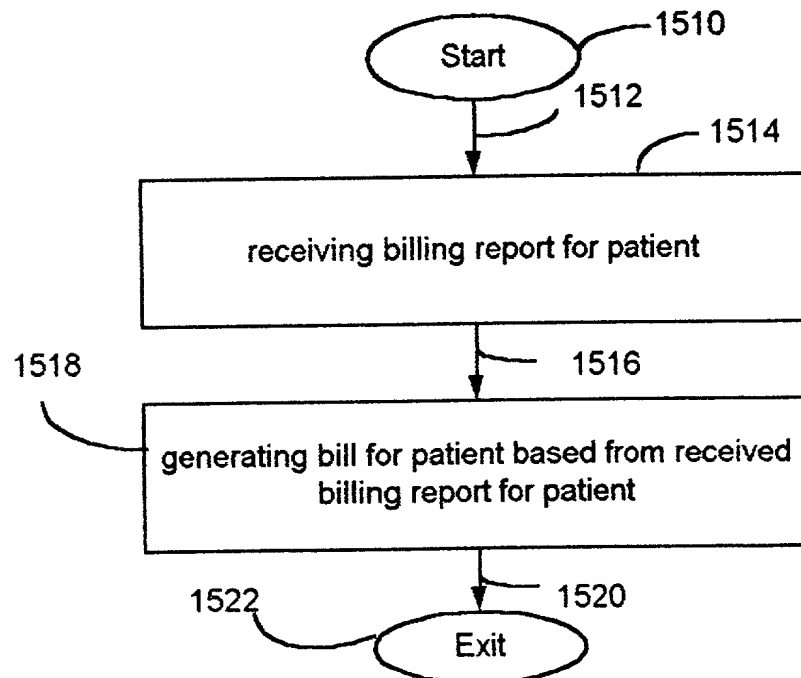


Fig. 38

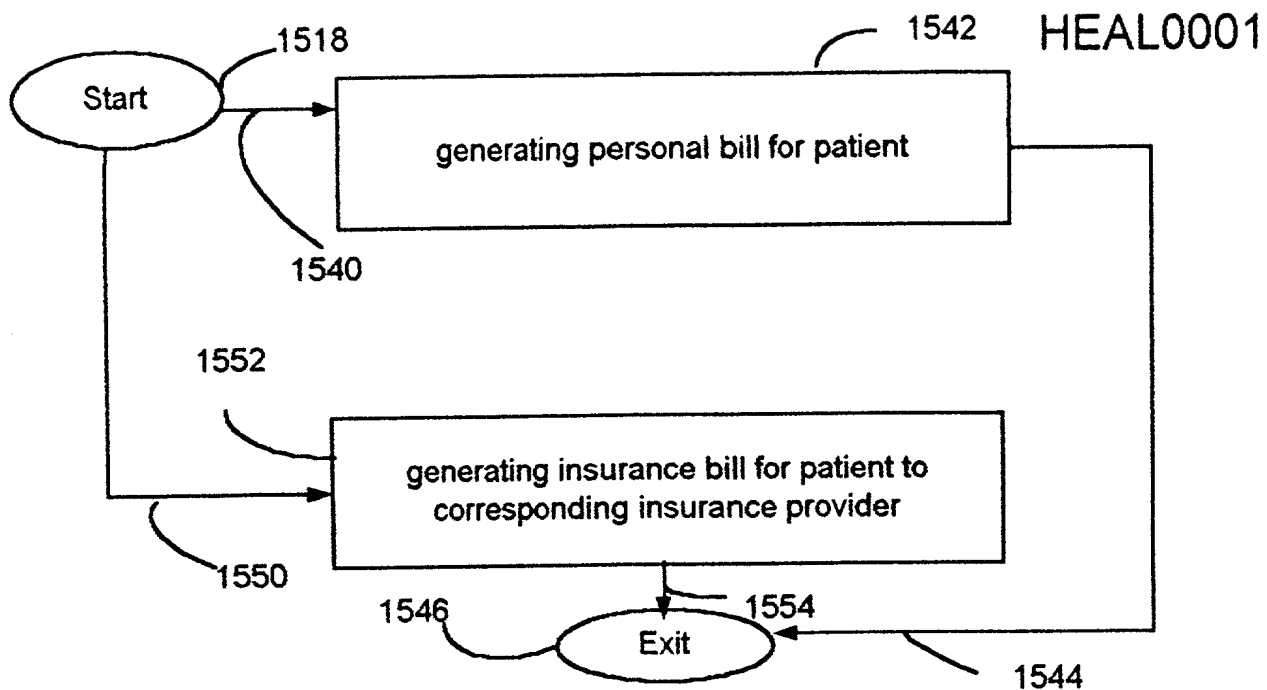


Fig. 39

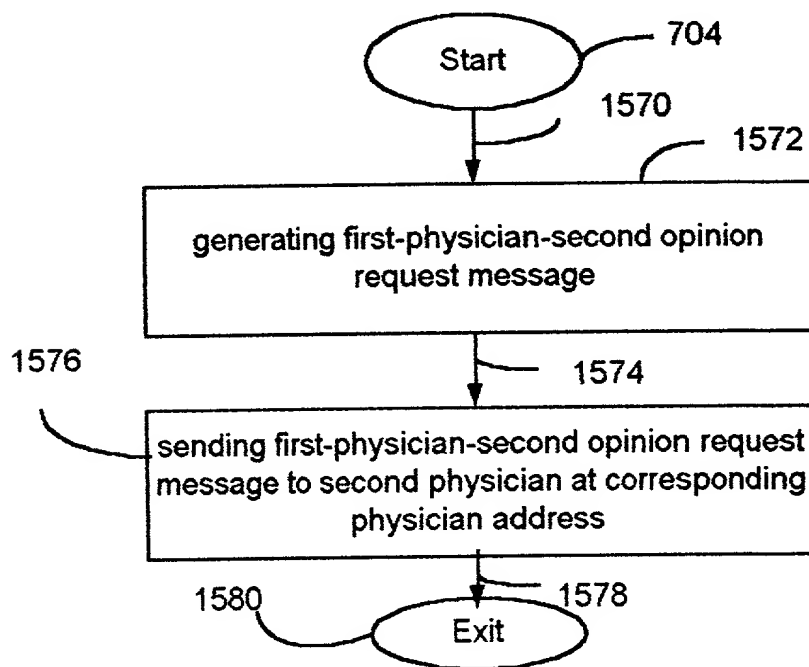


Fig. 40

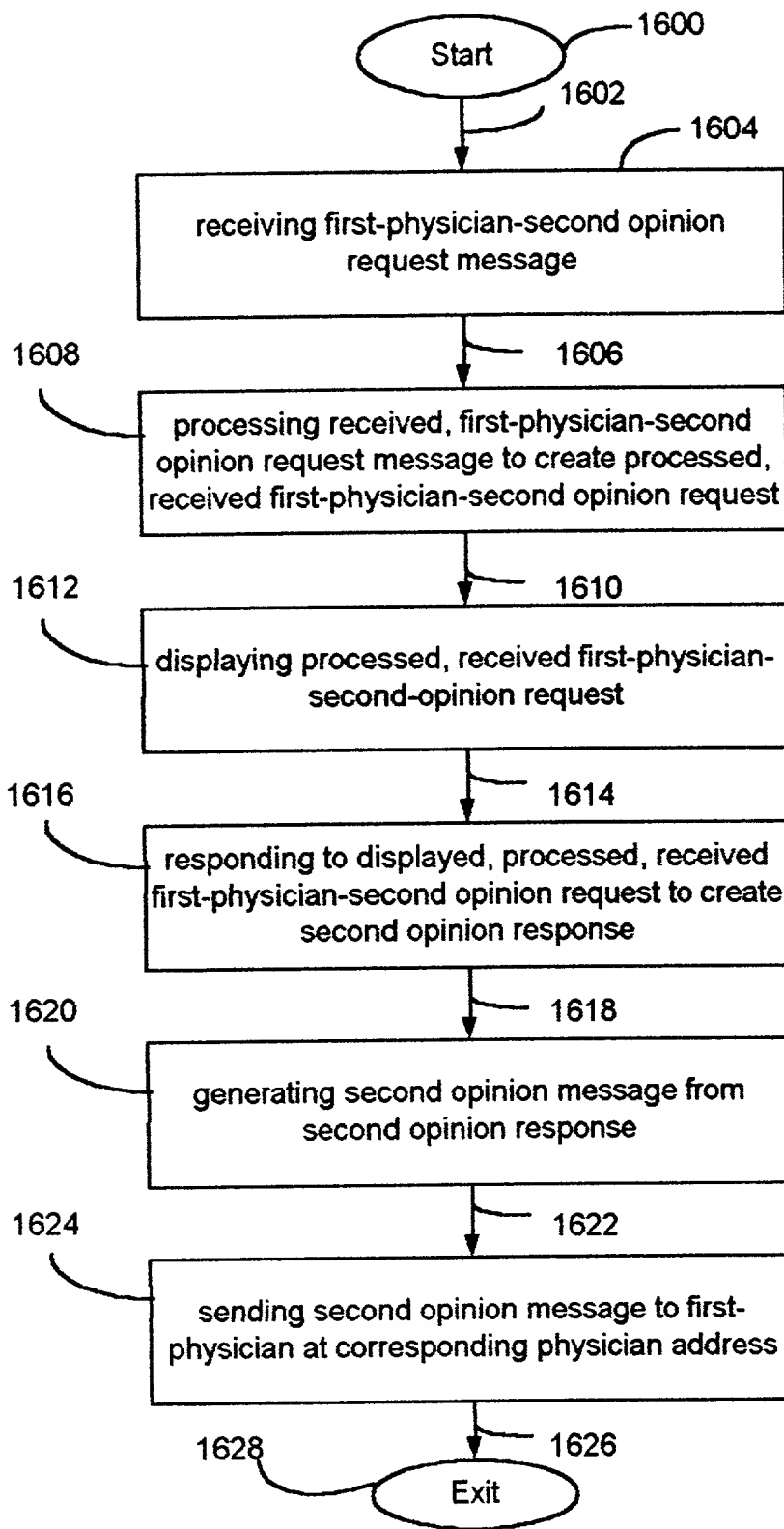


Fig. 41

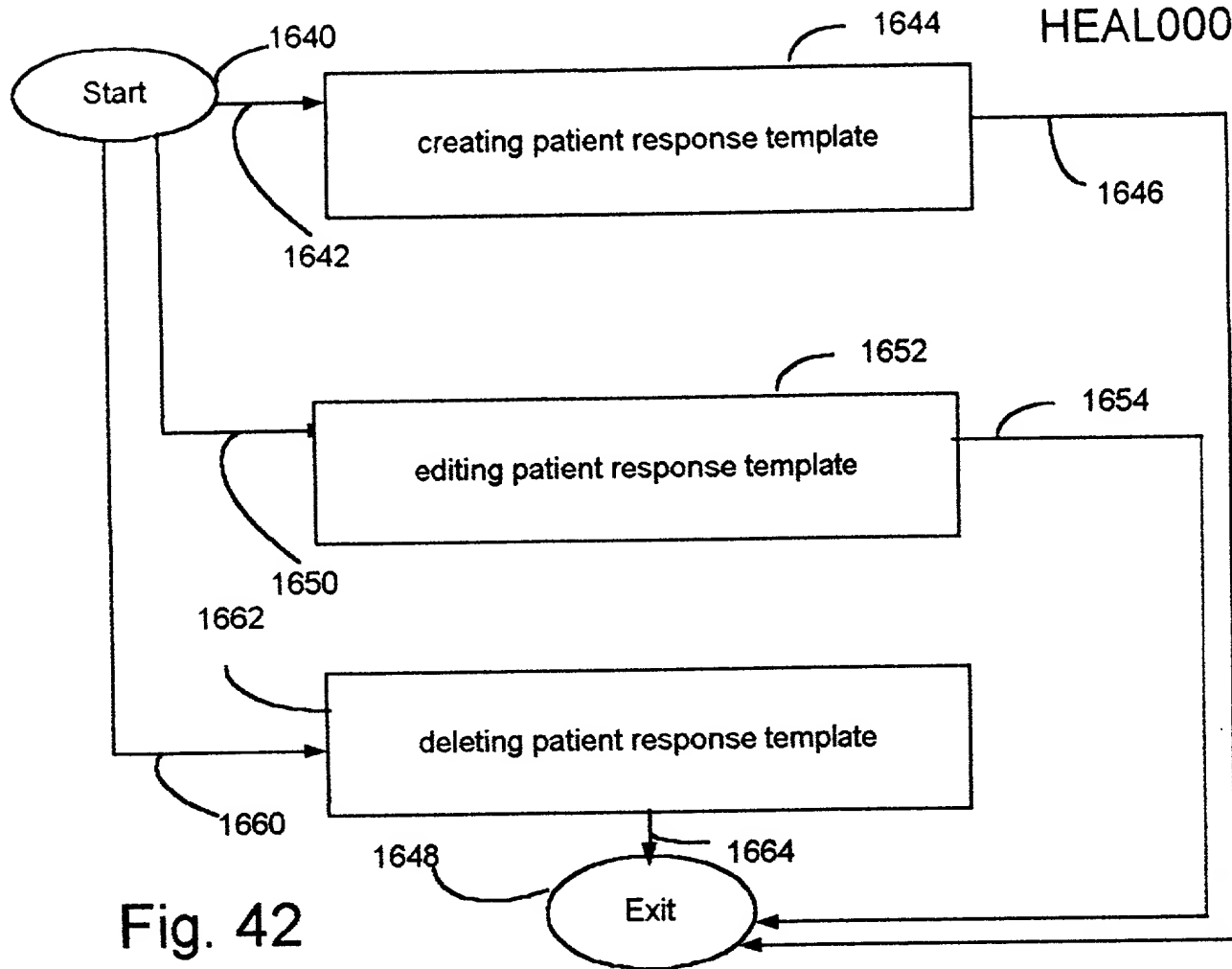


Fig. 42

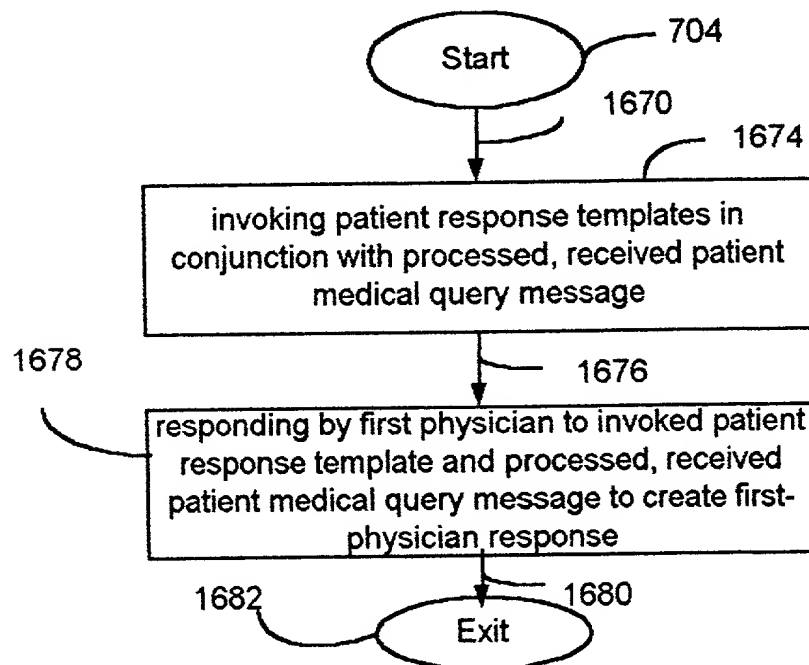


Fig. 43



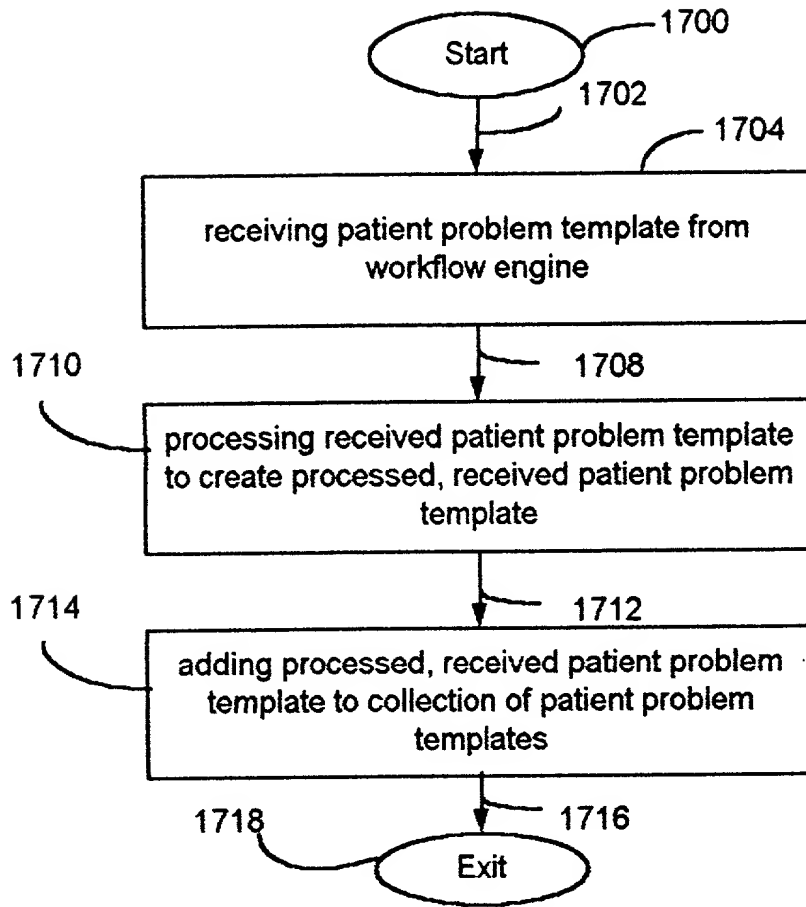


Fig. 44

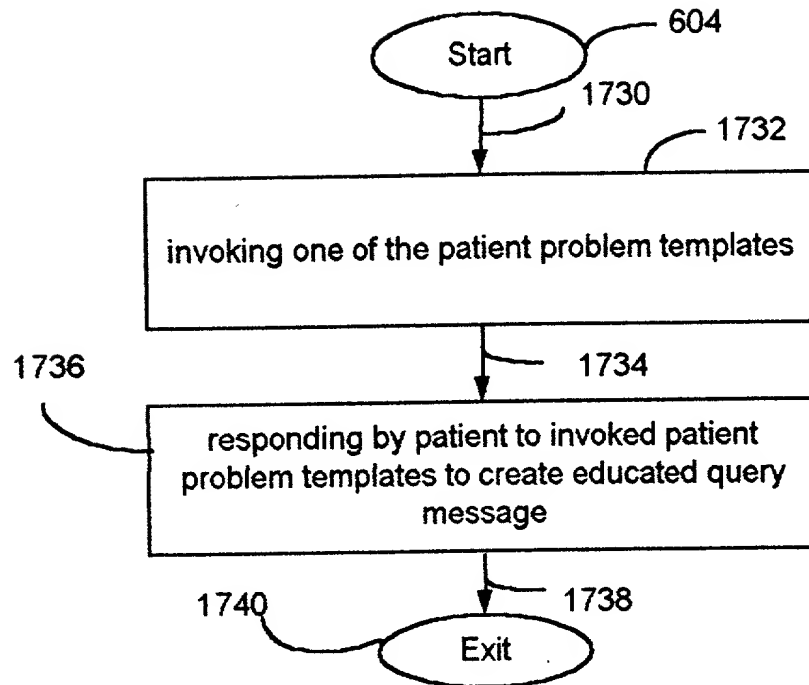


Fig. 45

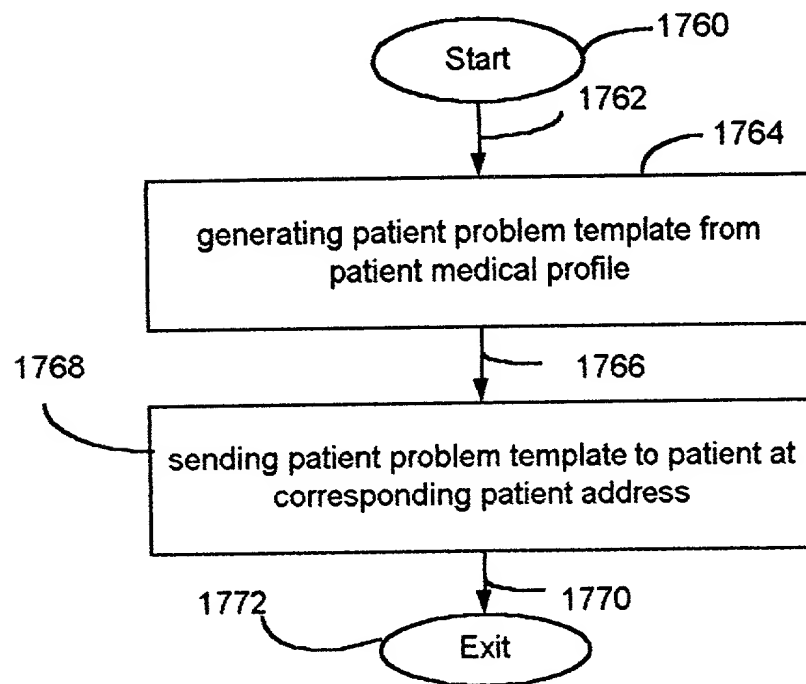


Fig. 46

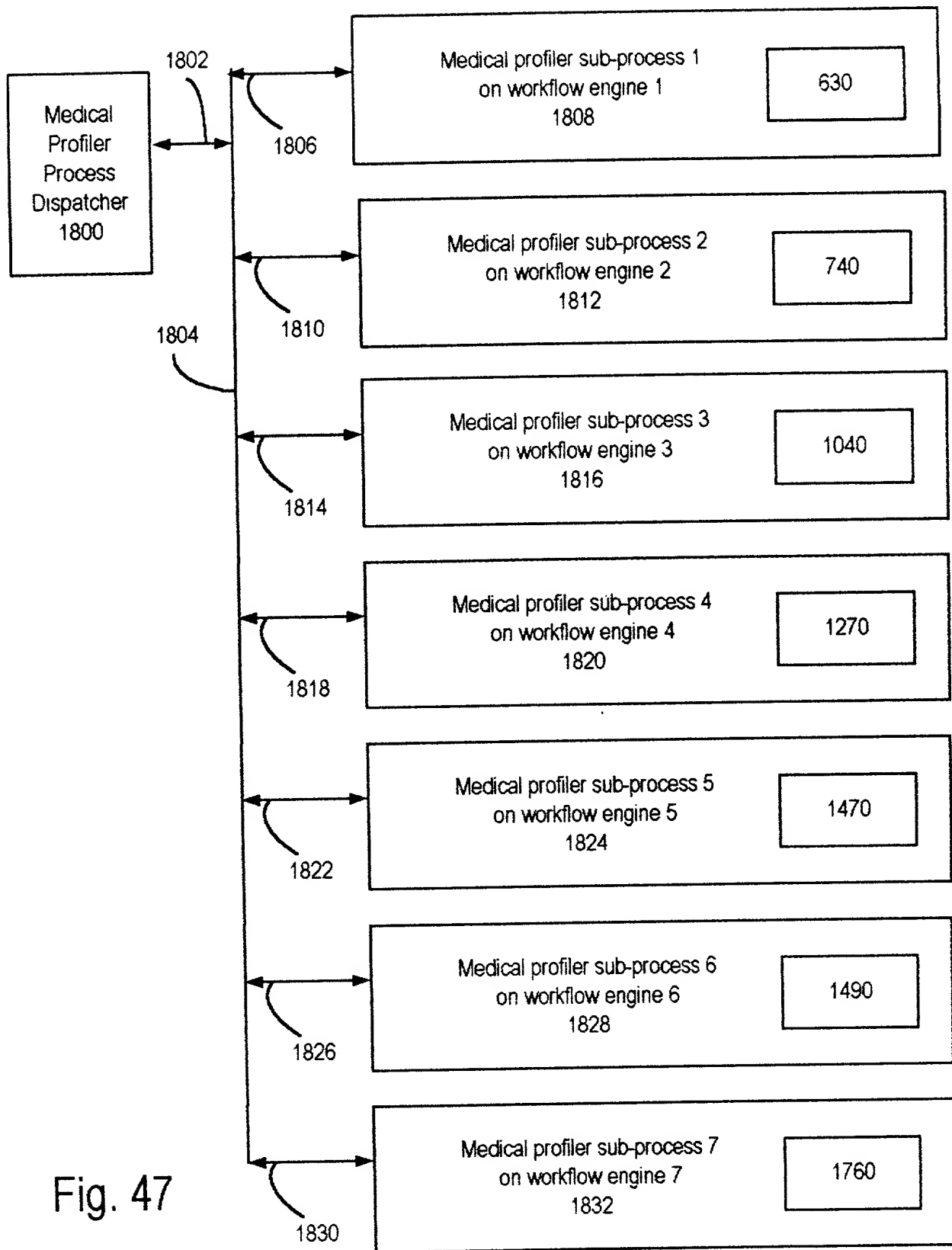


Fig. 47

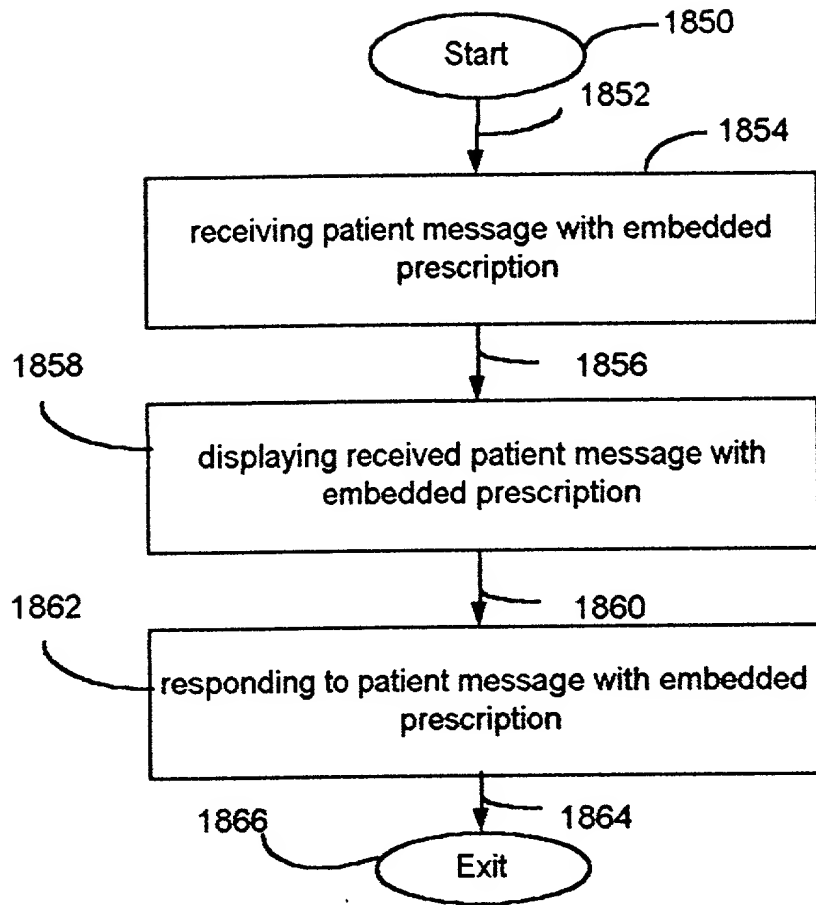


Fig. 48

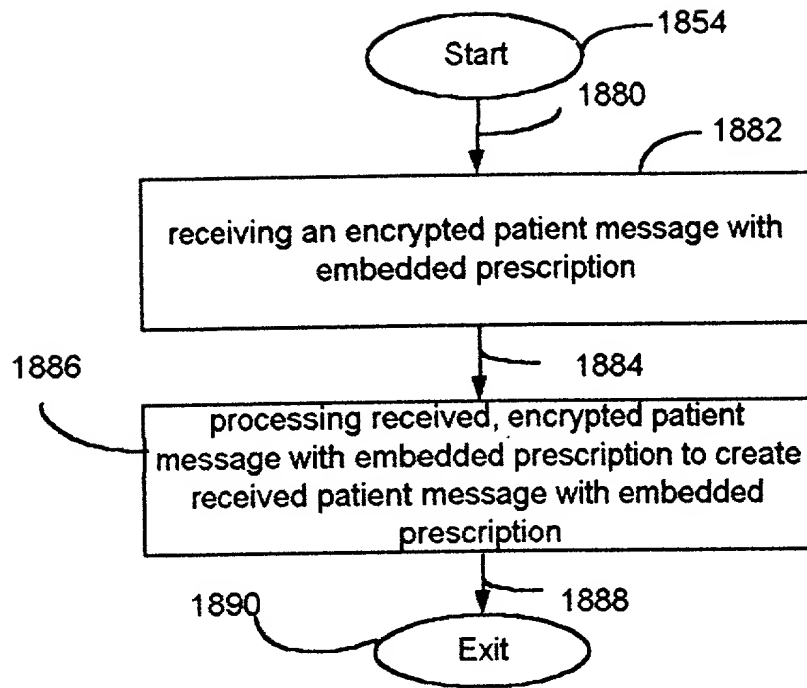


Fig. 49

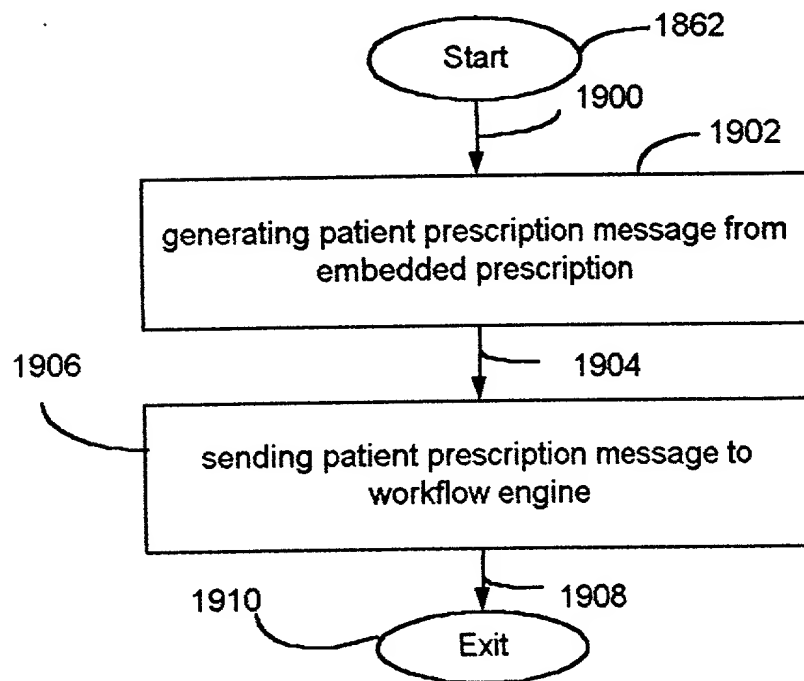


Fig. 50

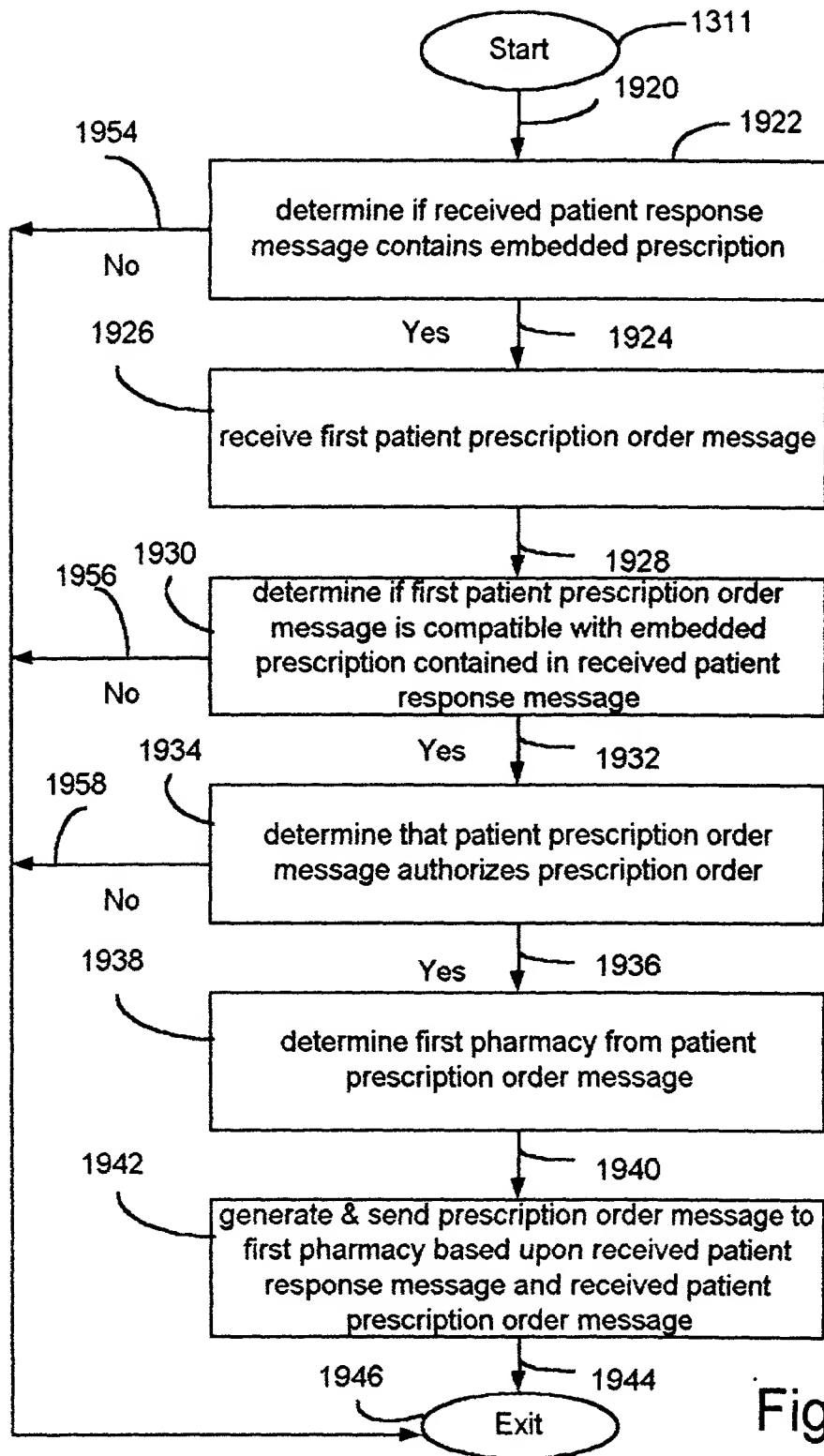


Fig. 50A

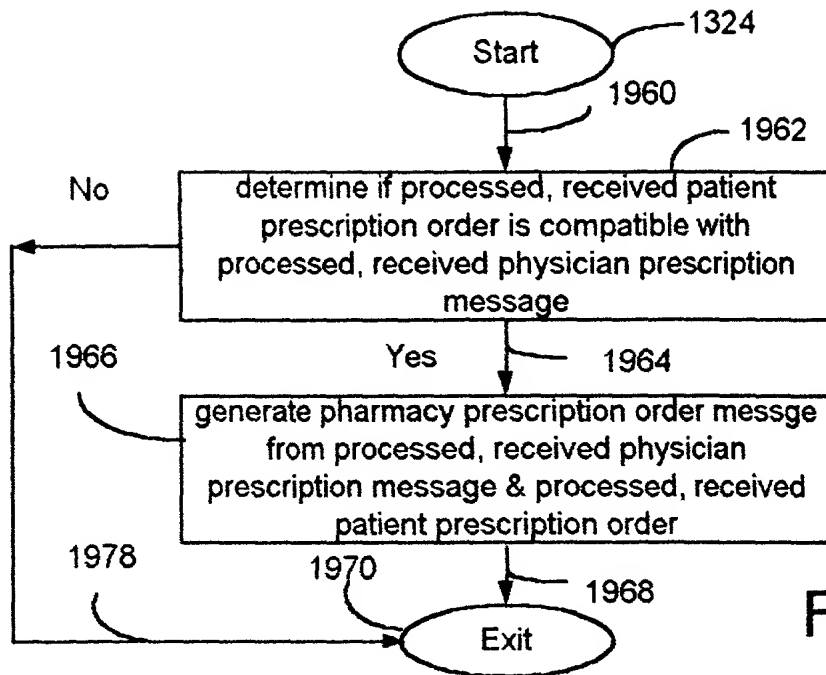


Fig. 50B

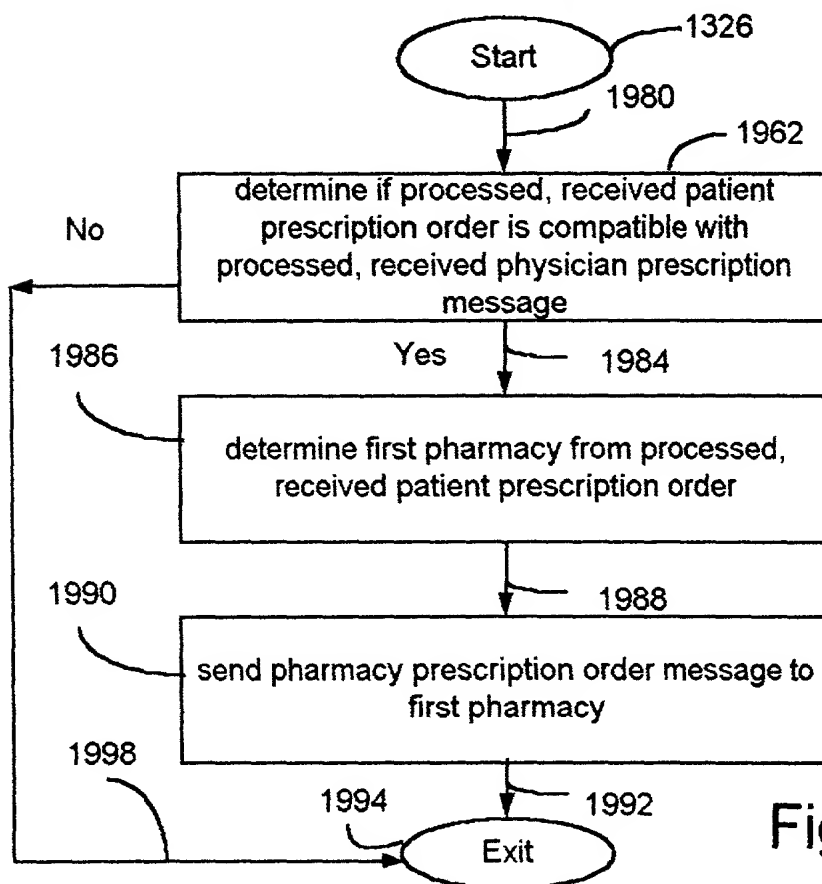


Fig. 50C

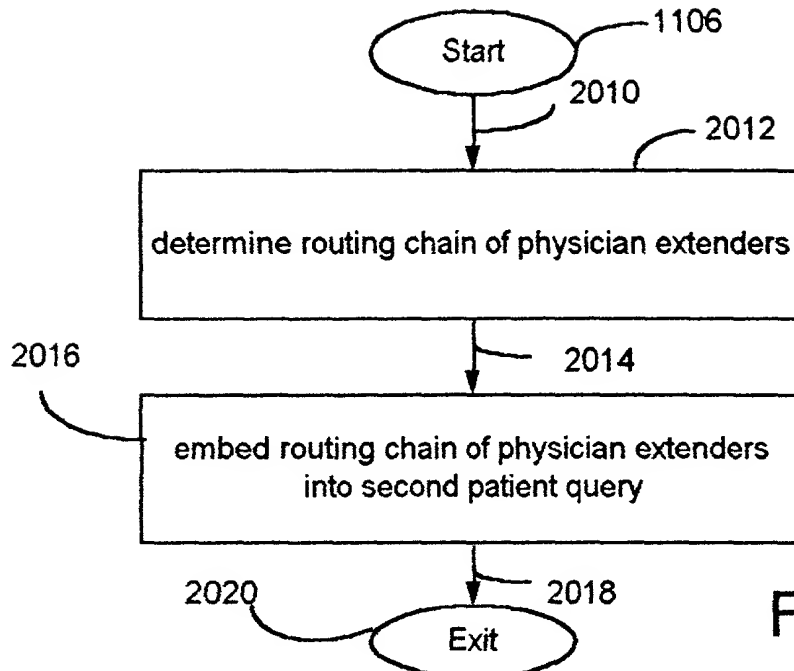


Fig. 50D

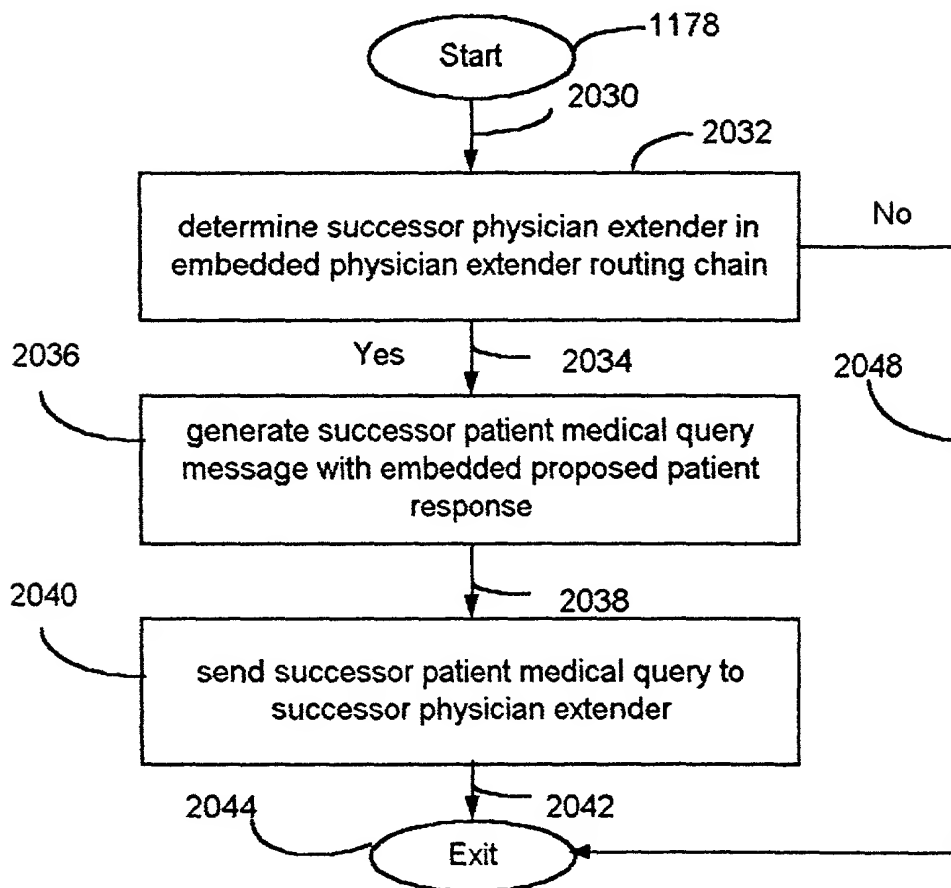


Fig. 50E



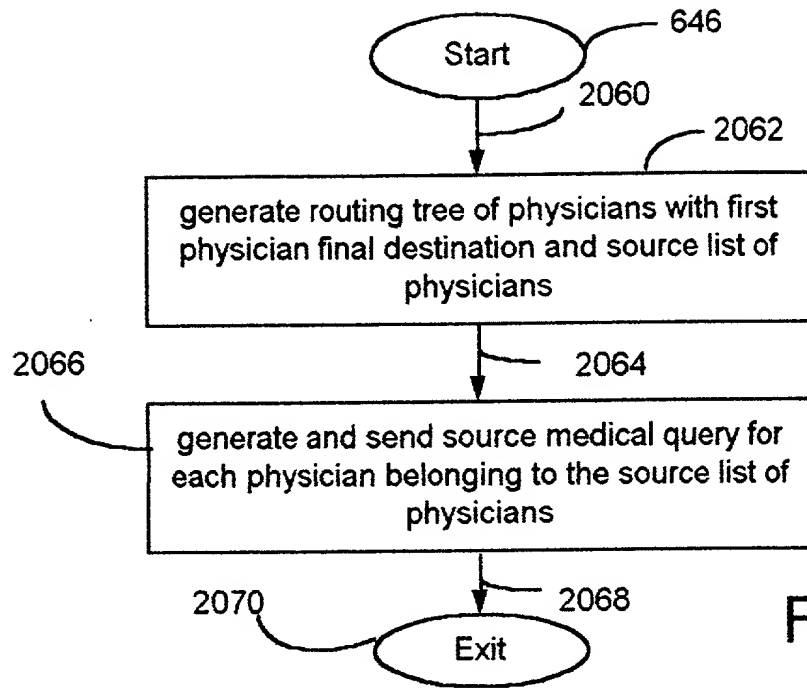


Fig. 50F

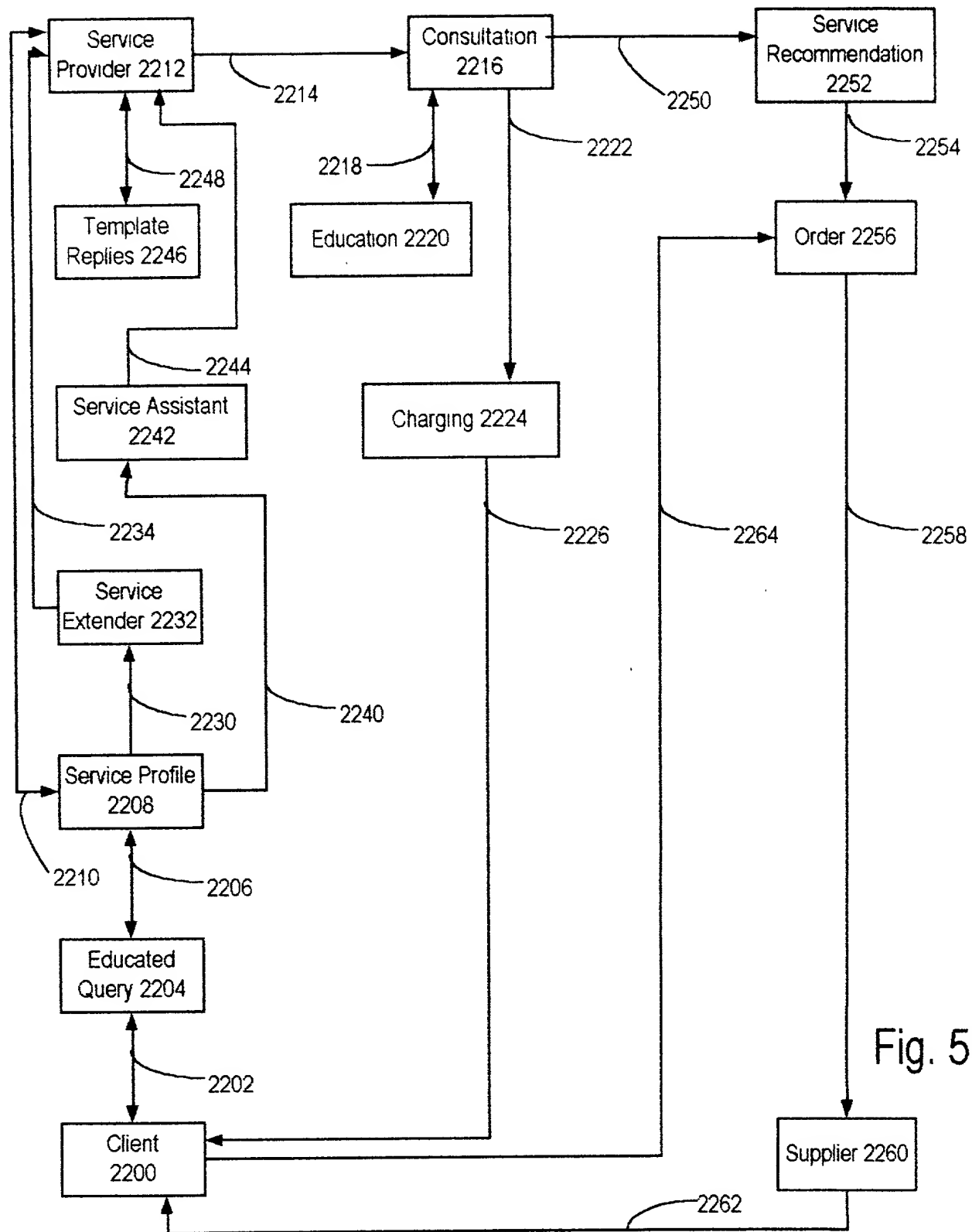


Fig. 51

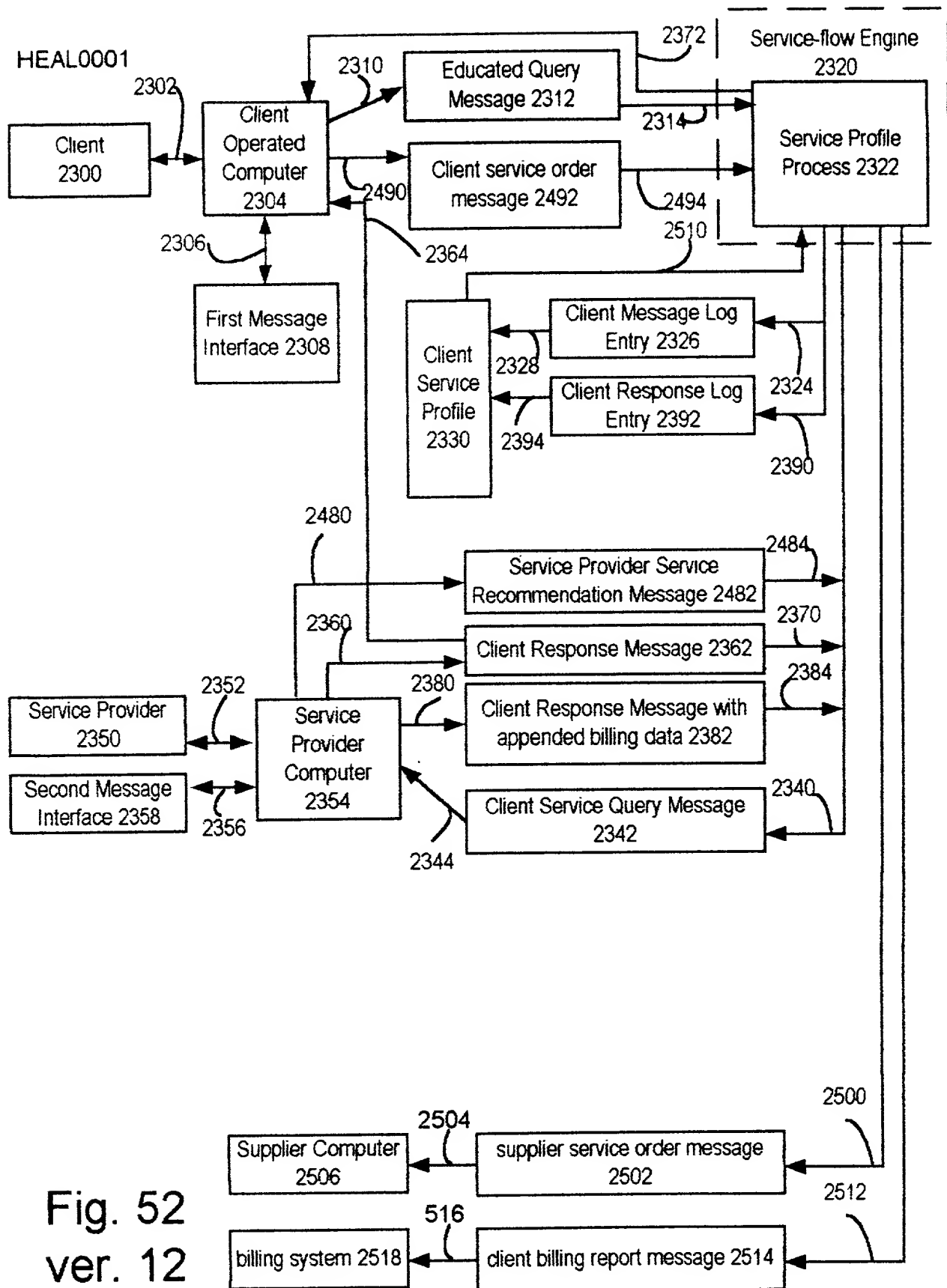


Fig. 52  
ver. 12

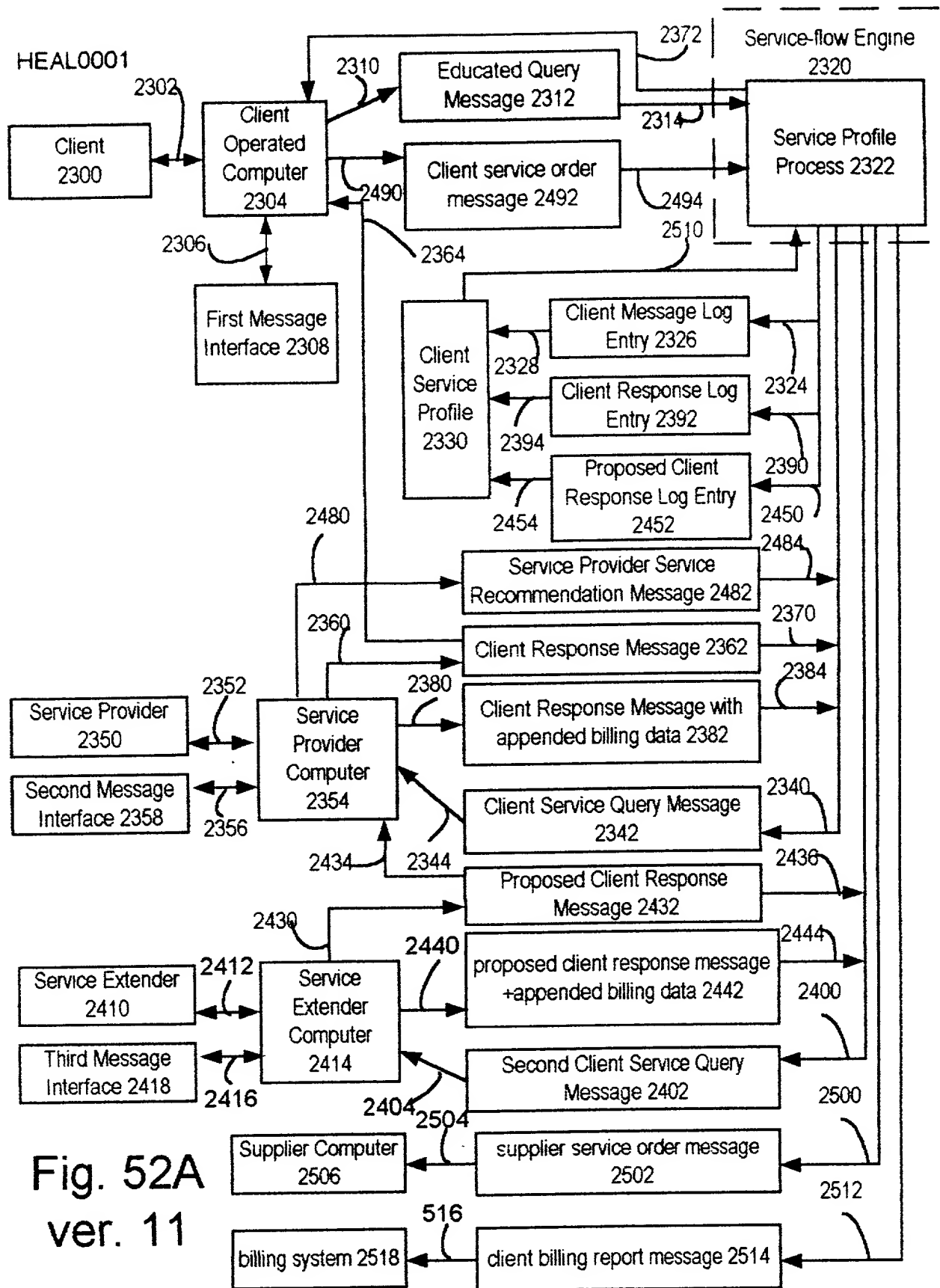


Fig. 52A  
ver. 11

HEAL0001

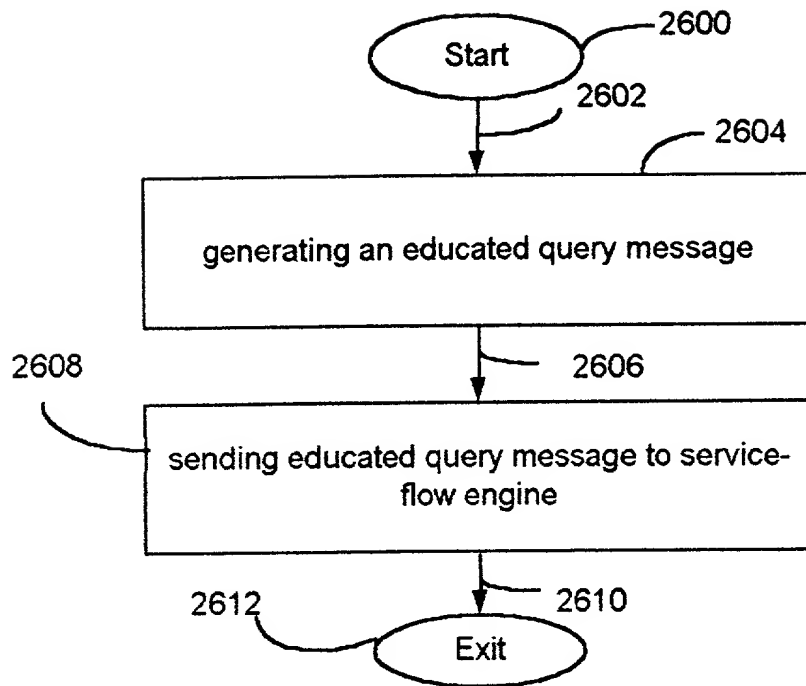


Fig. 53

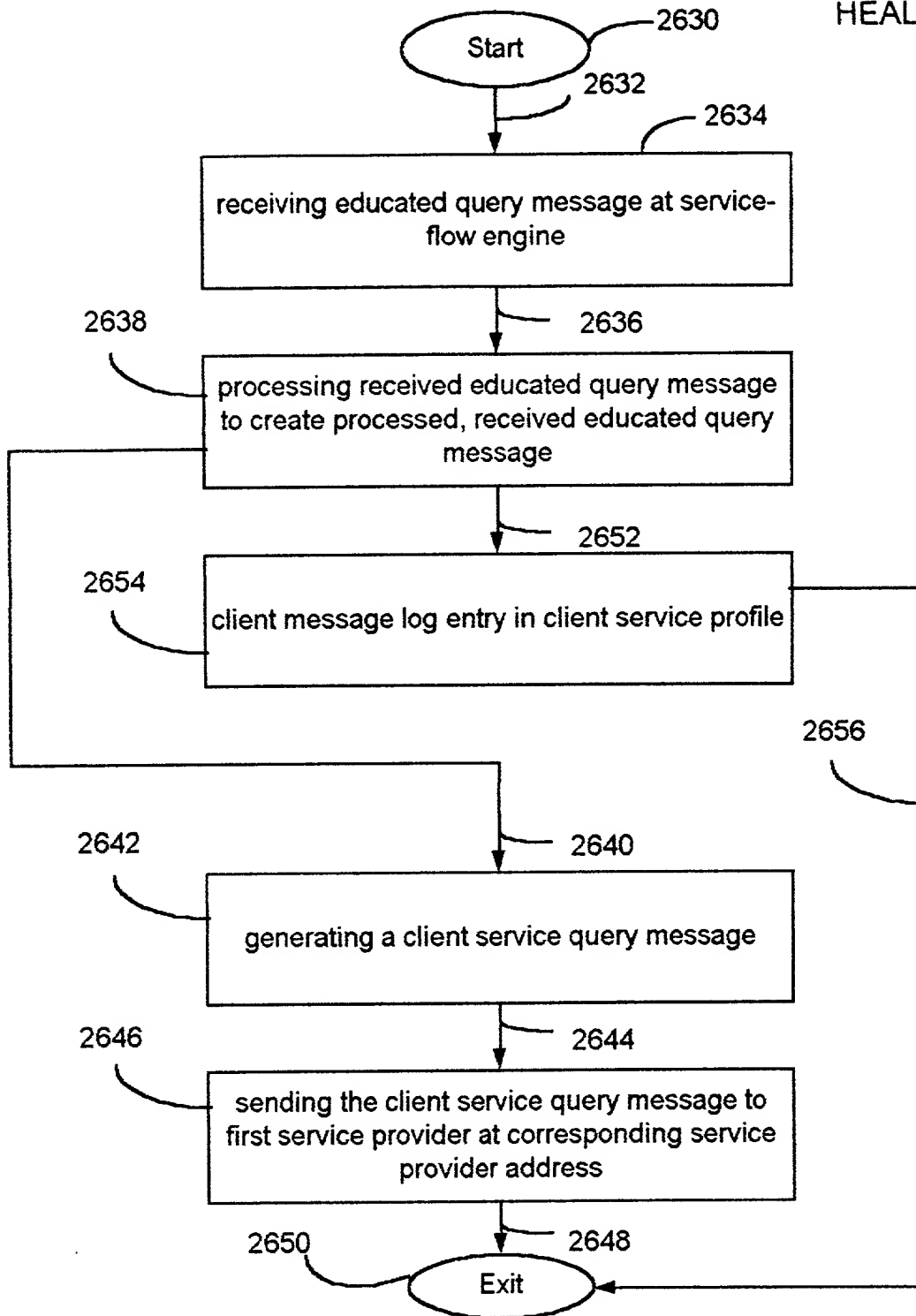


Fig. 54

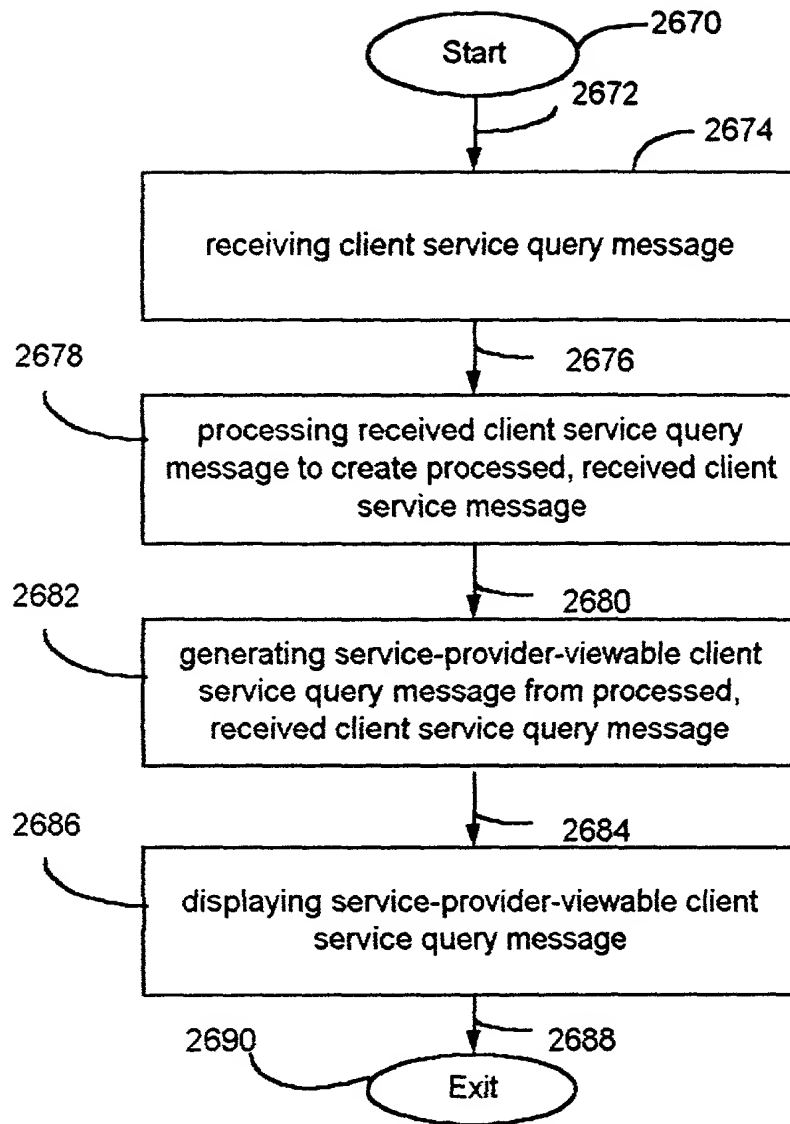


Fig. 55

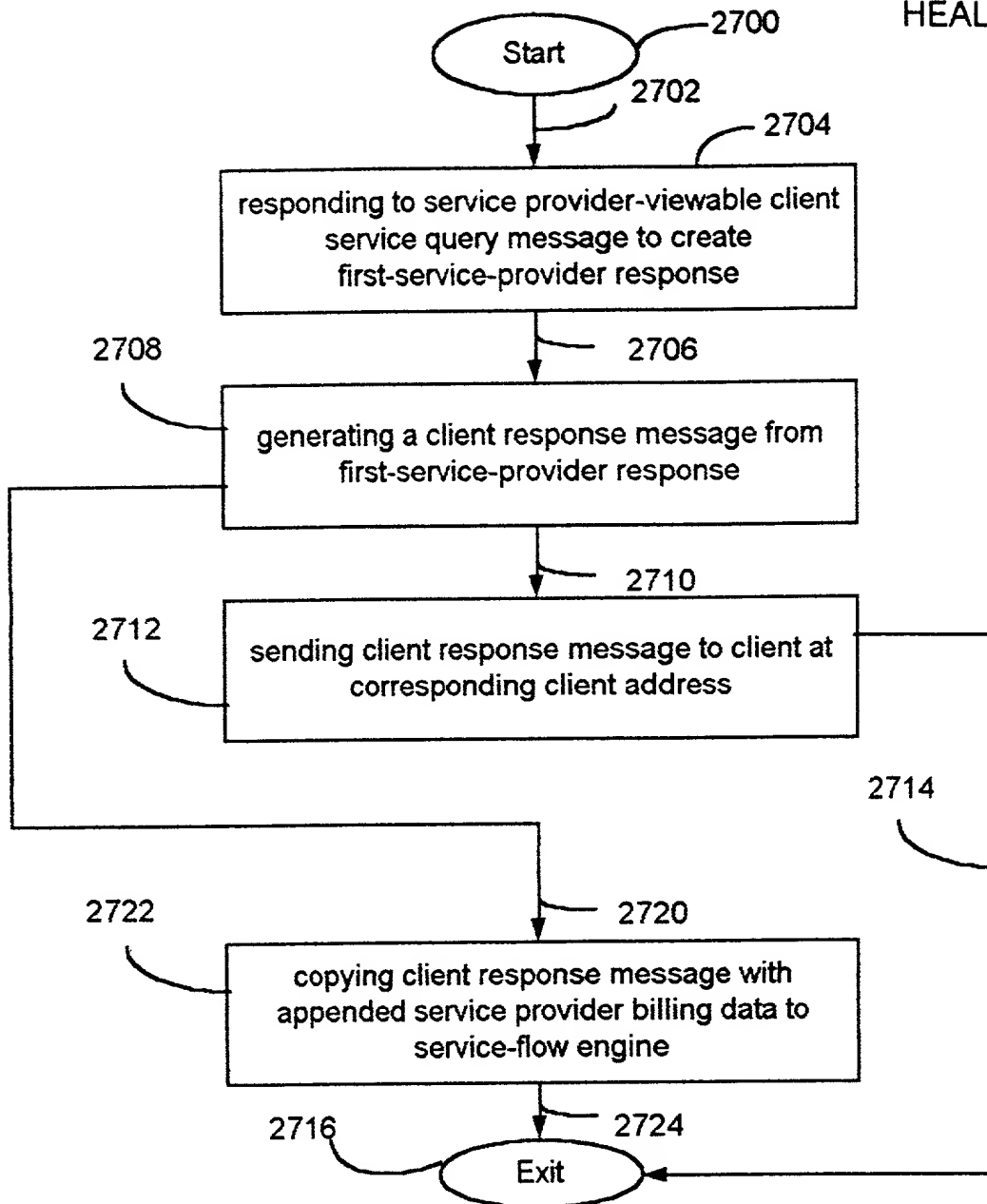


Fig. 56



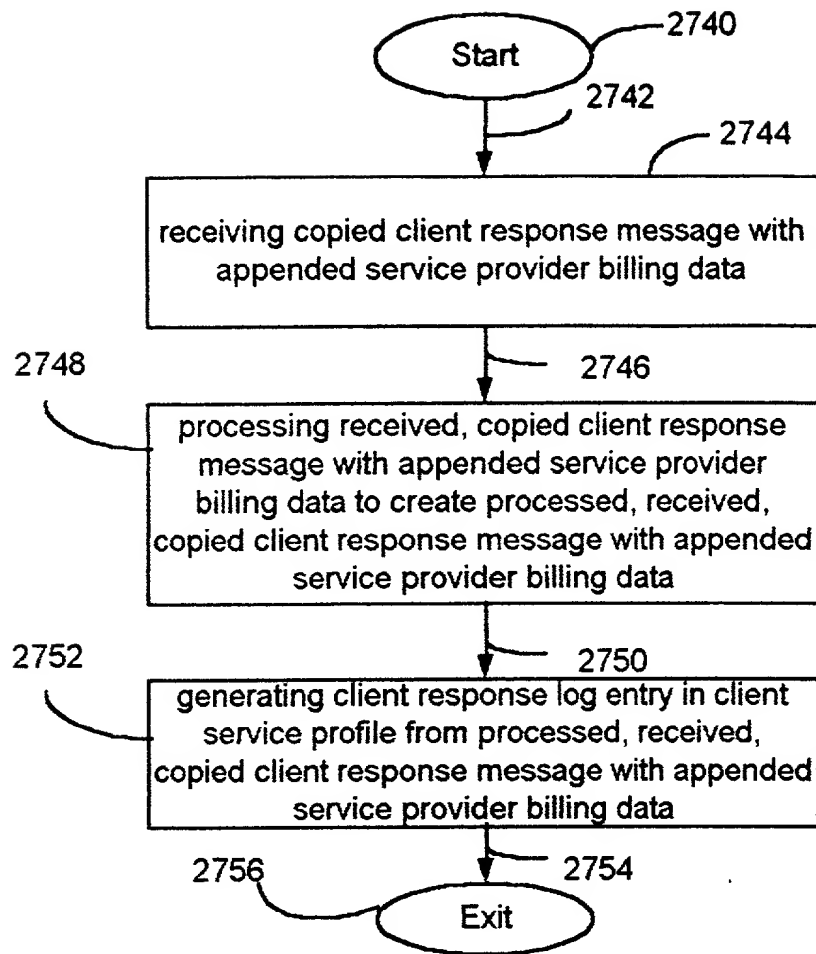


Fig. 57

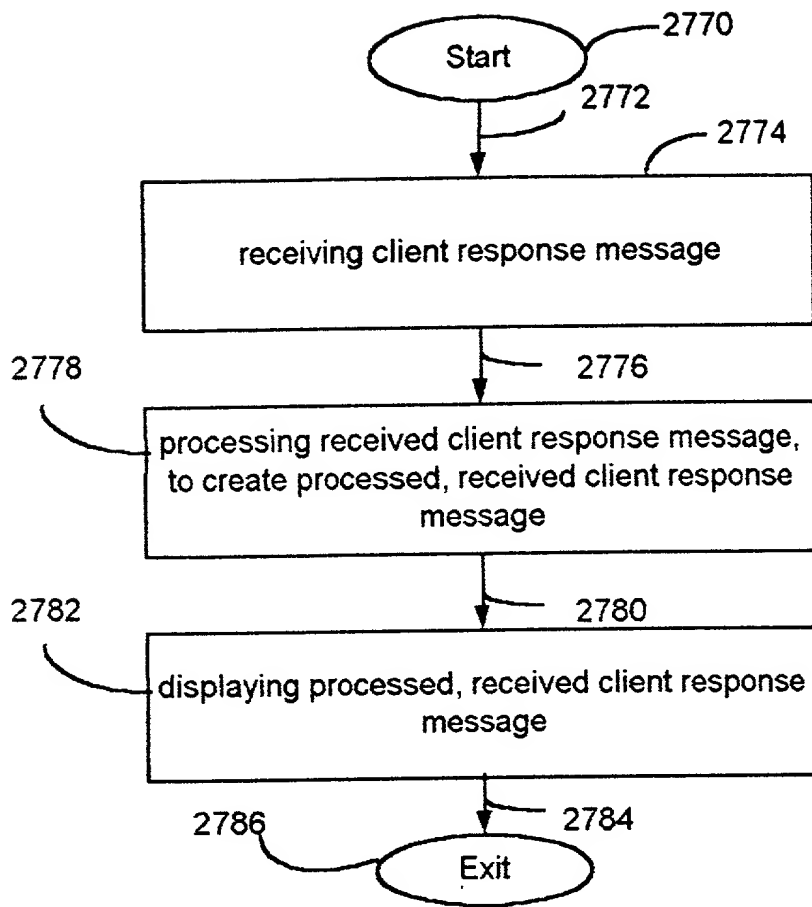


Fig. 58

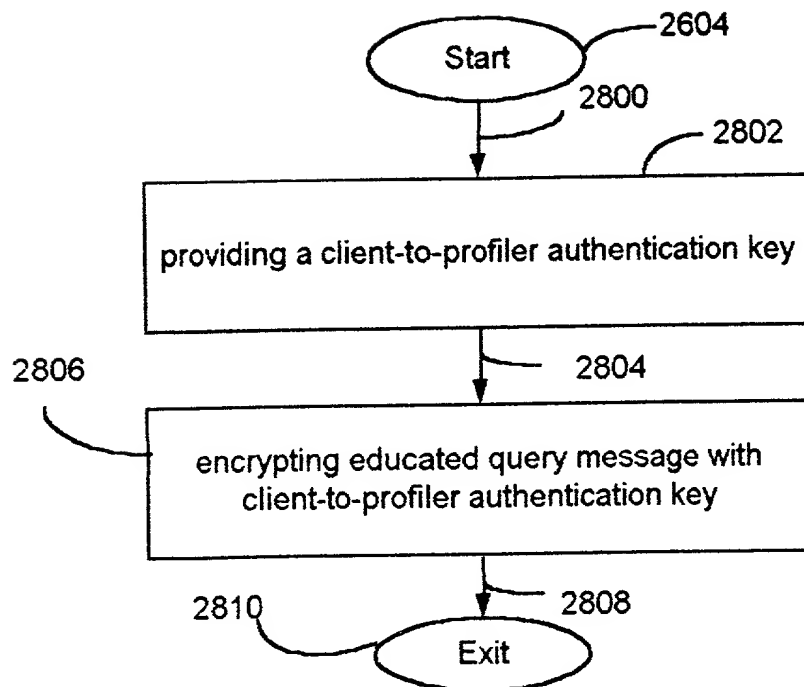


Fig. 59

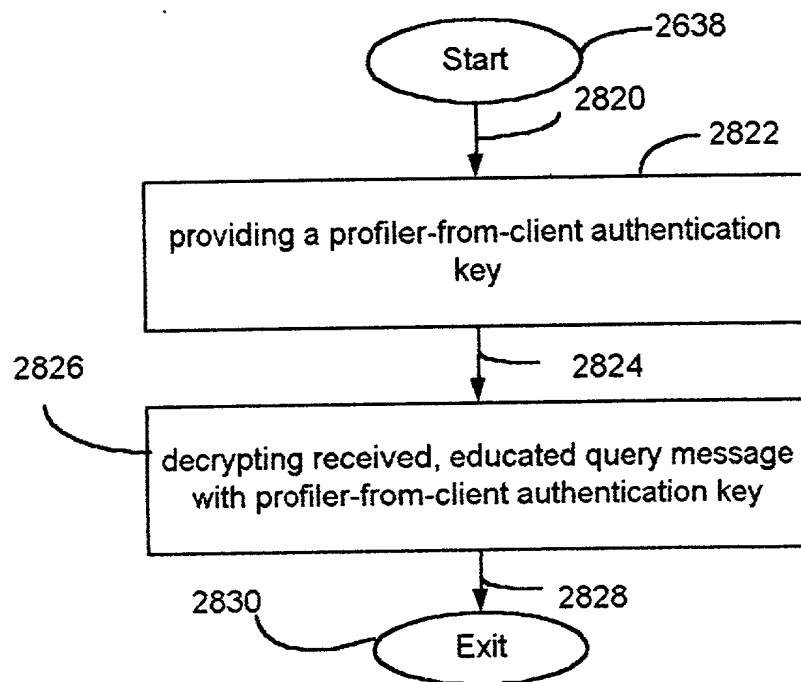


Fig. 60

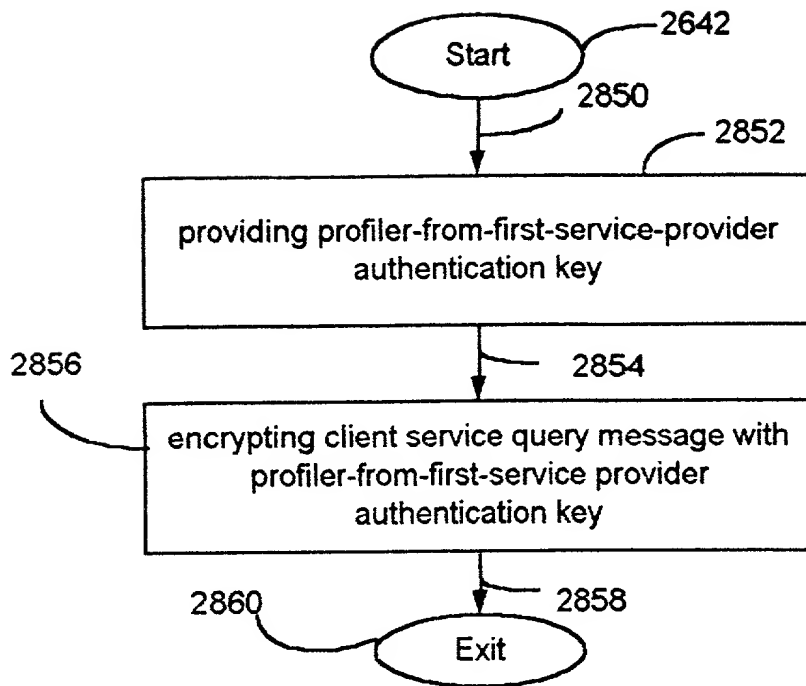


Fig. 61

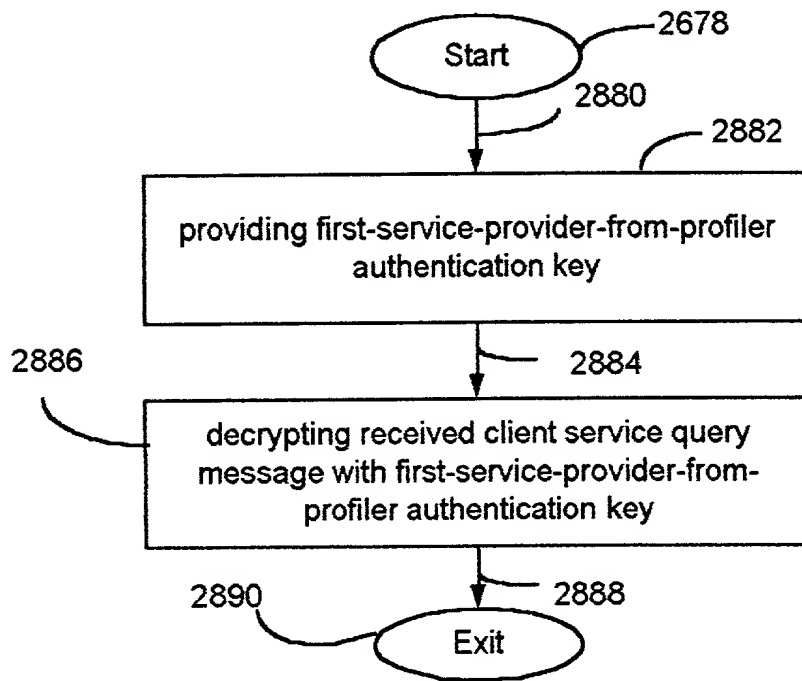


Fig. 62

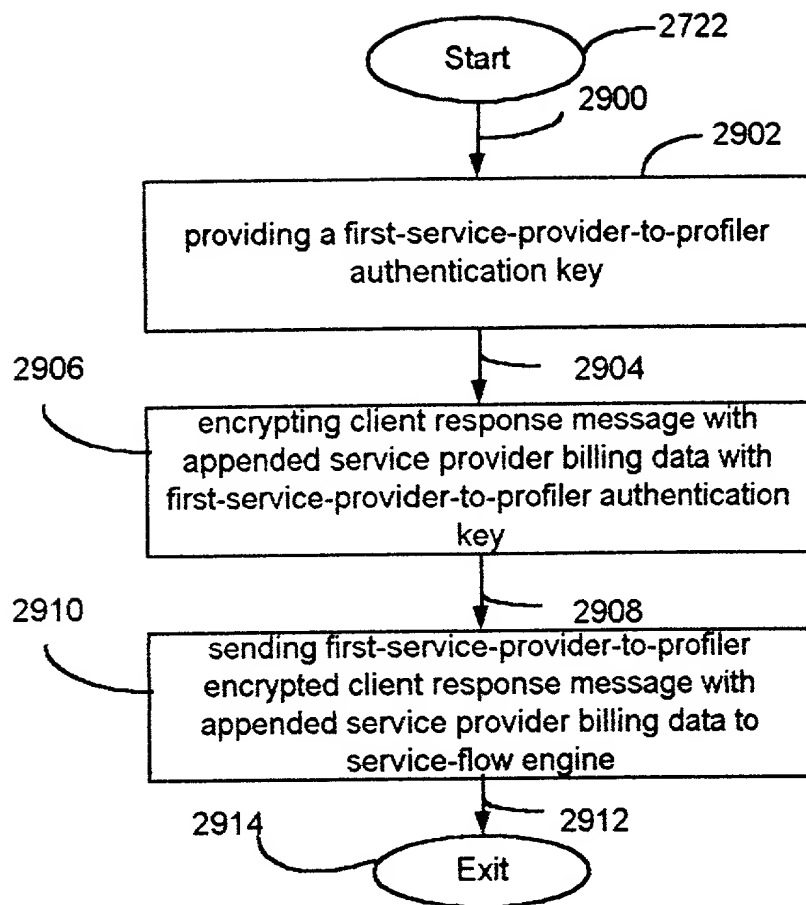


Fig. 63

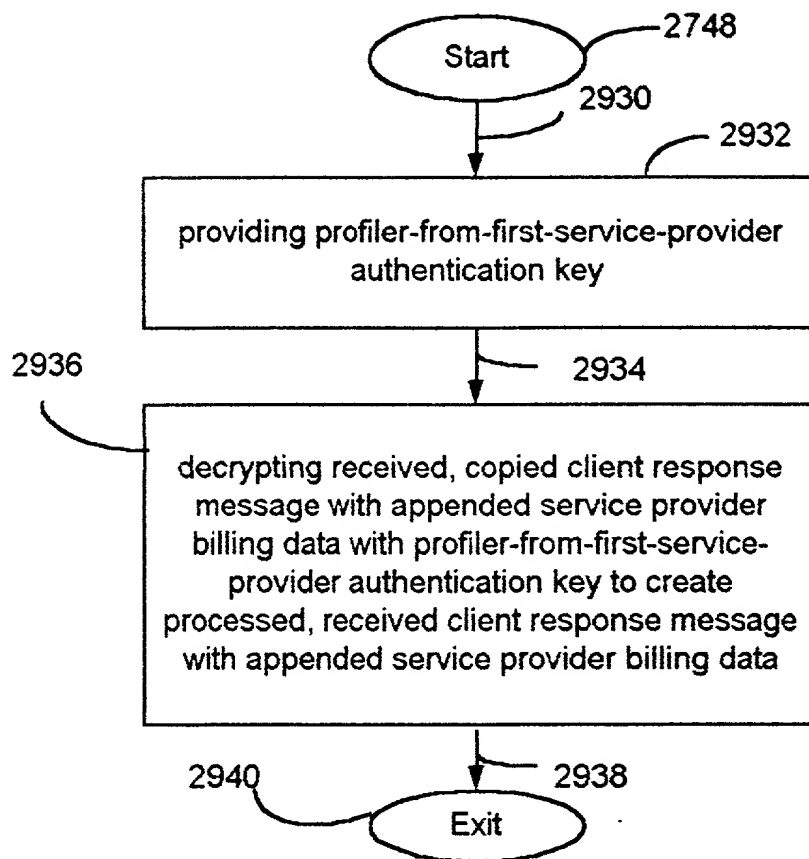


Fig. 64

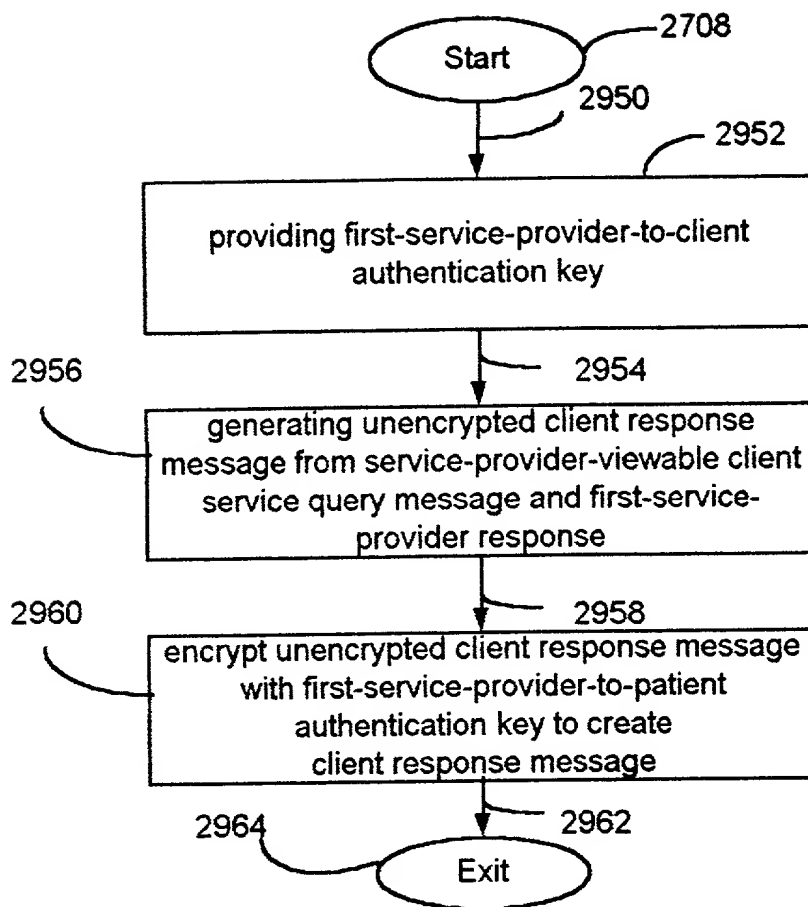


Fig. 65

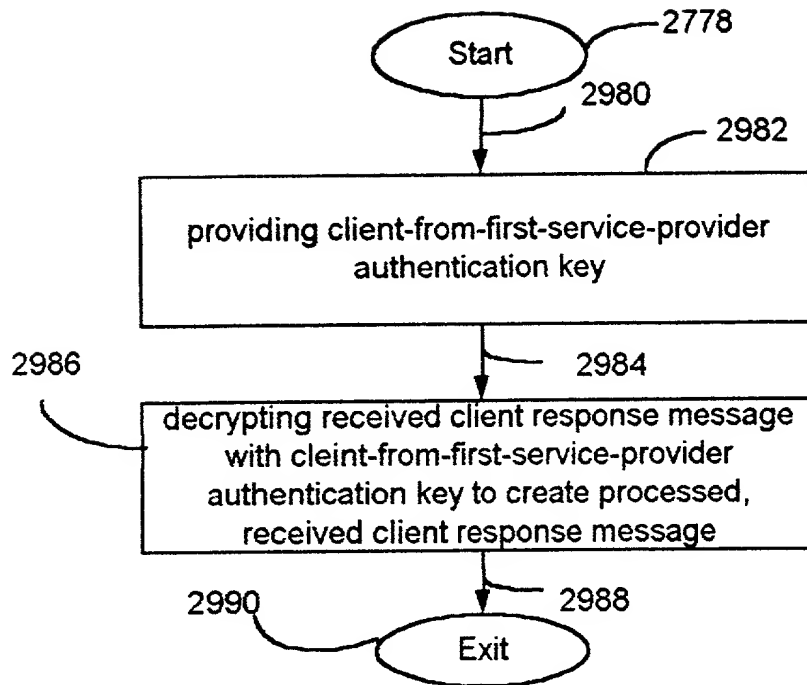


Fig. 66

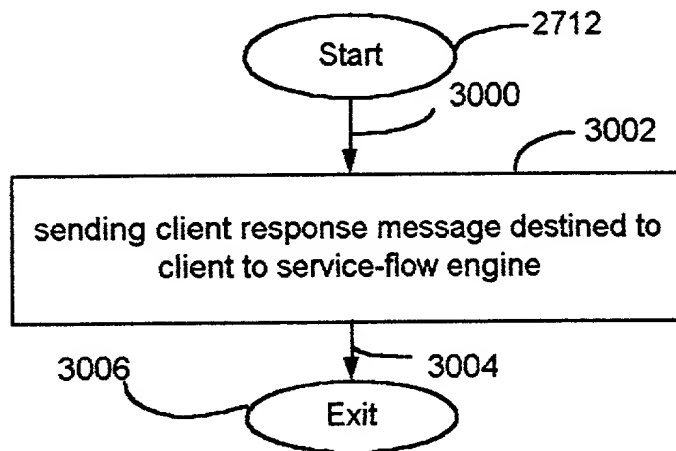


Fig. 67



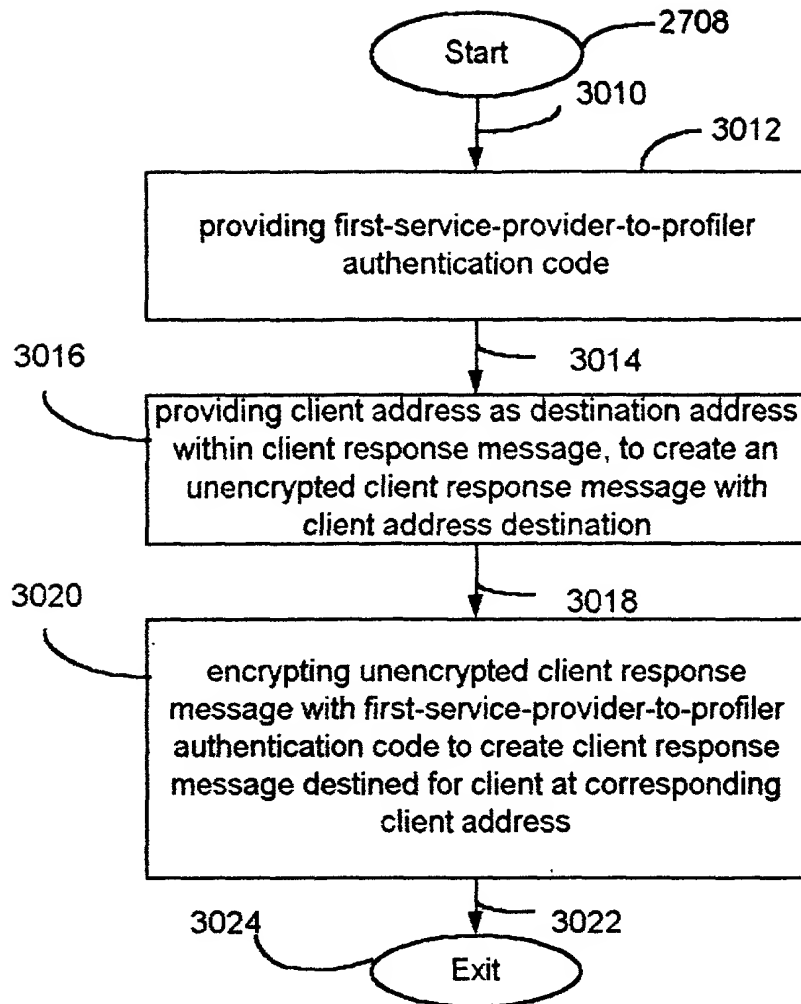


Fig. 68

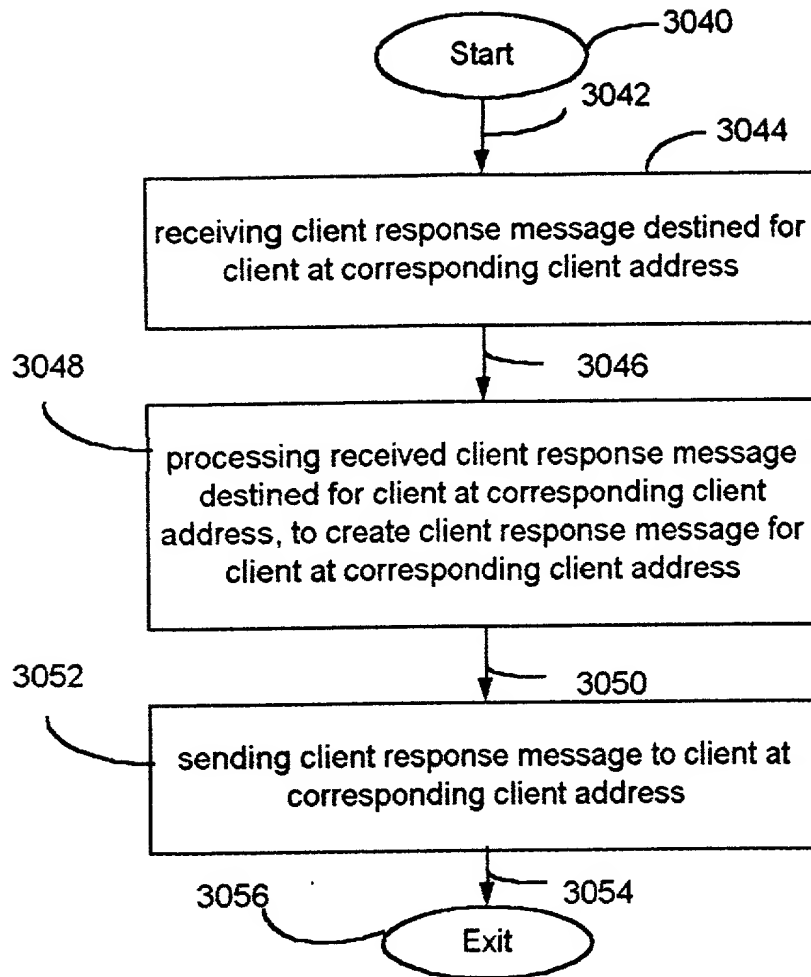


Fig. 69

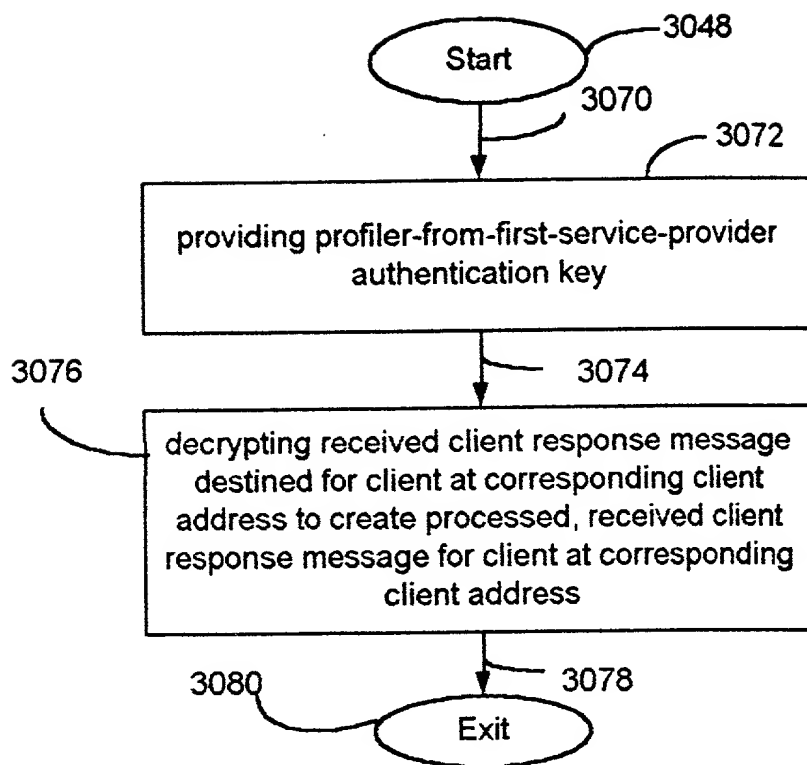


Fig. 70

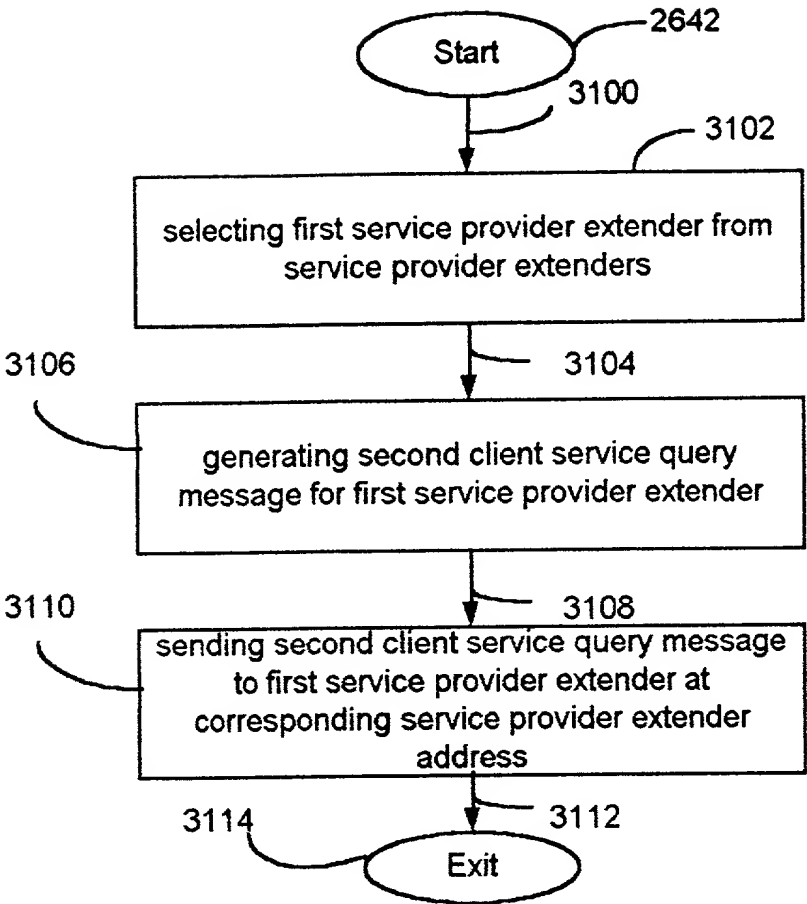


Fig. 71

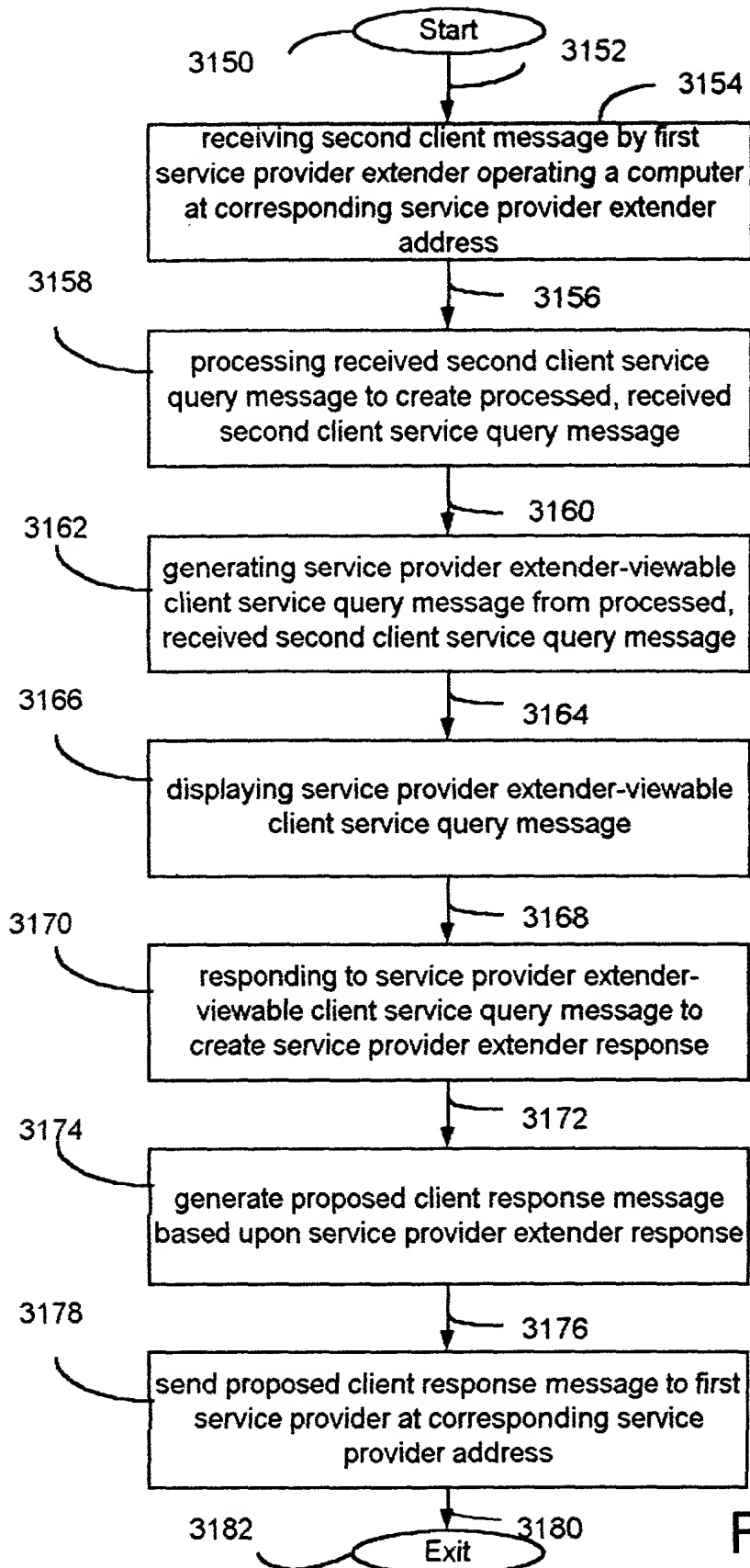


Fig. 72

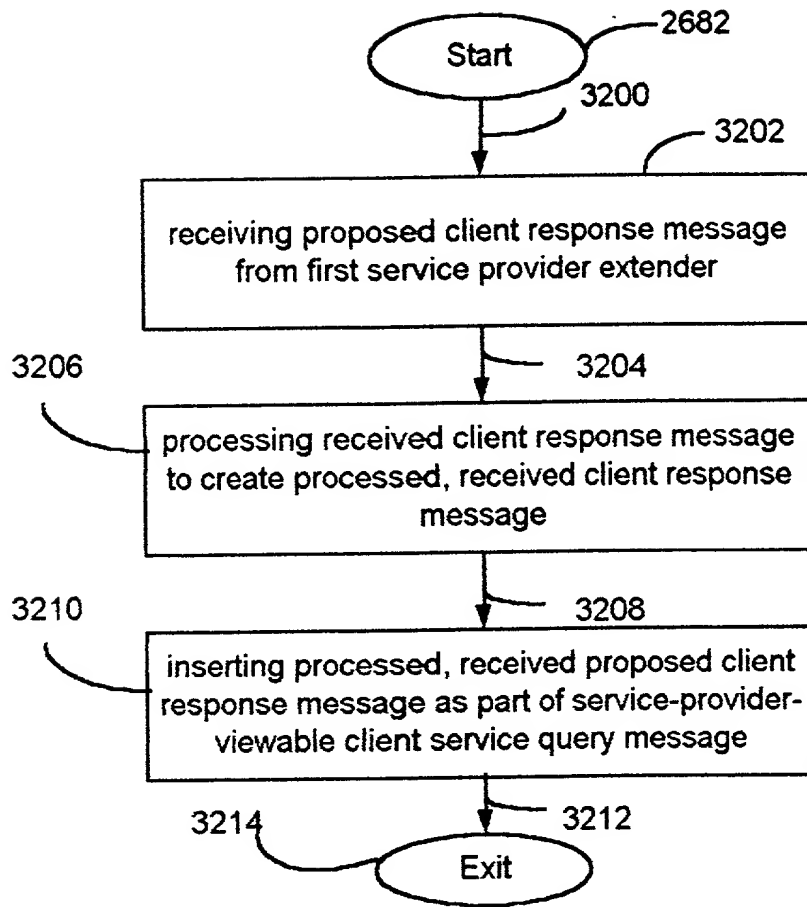


Fig. 73

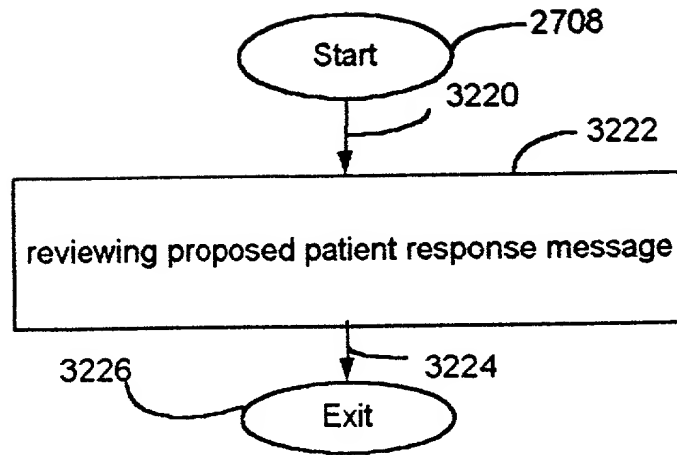


Fig. 74

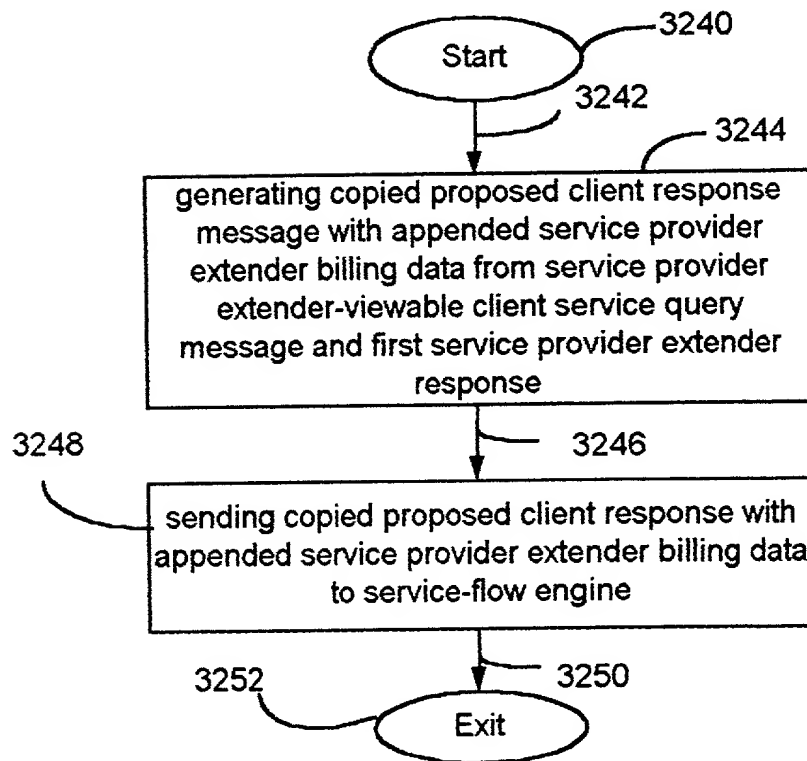


Fig. 75

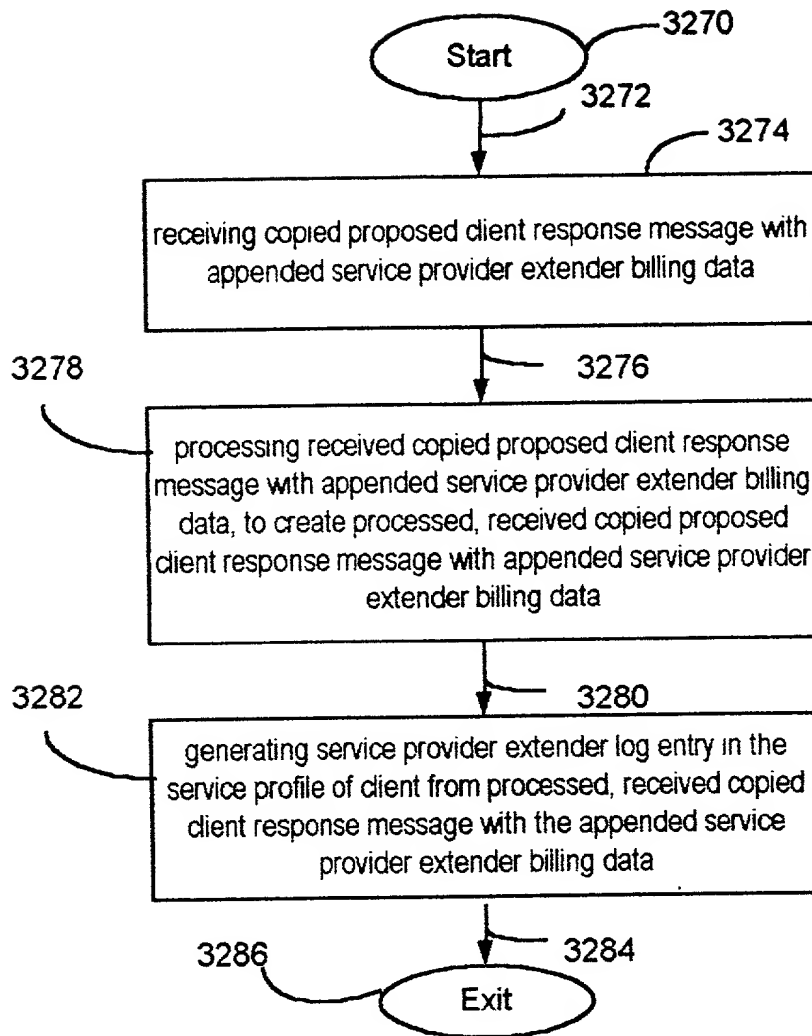


Fig. 76



HEAL0001

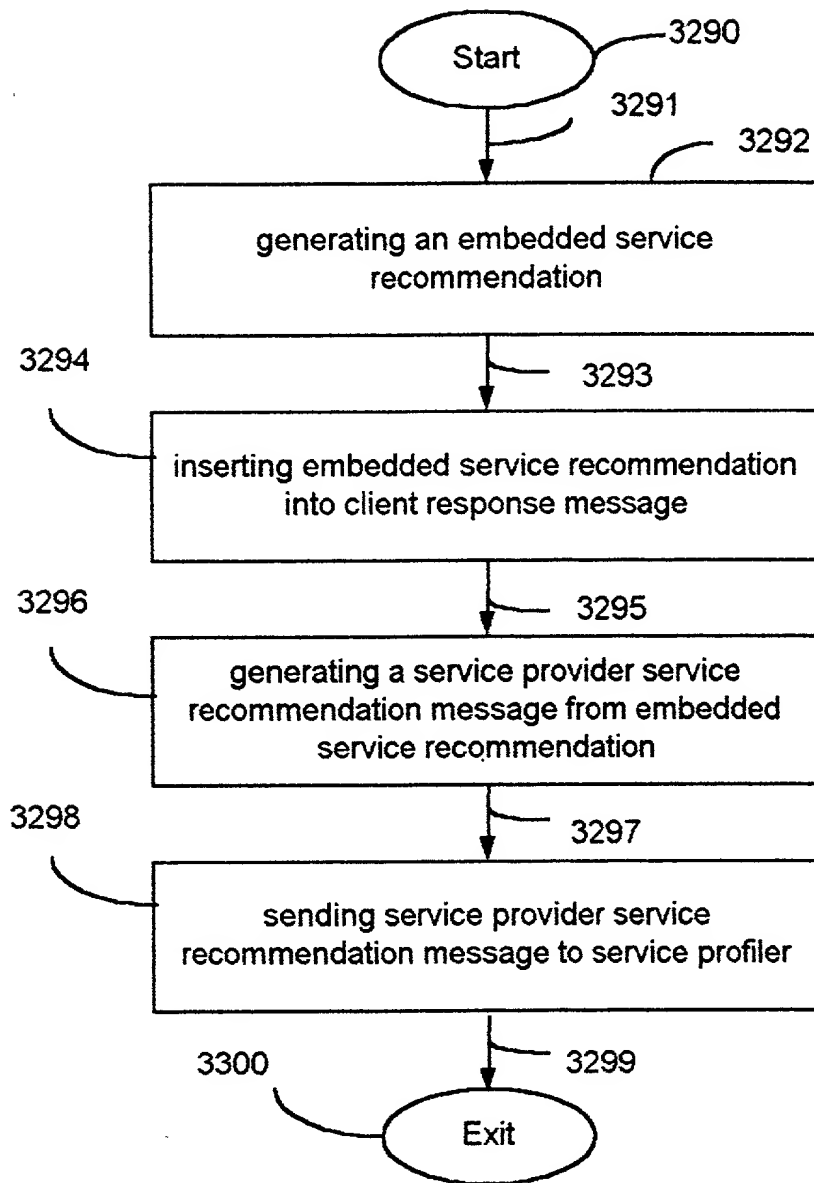


Fig. 77

HEAL0001

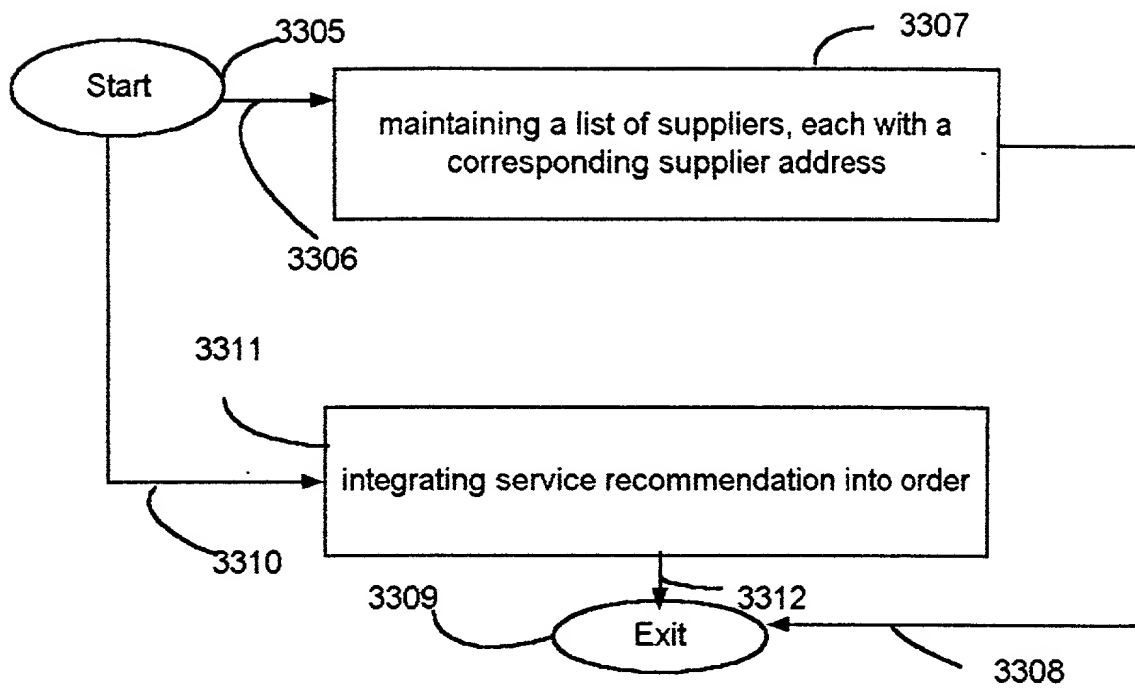


Fig. 78  
ver. 2

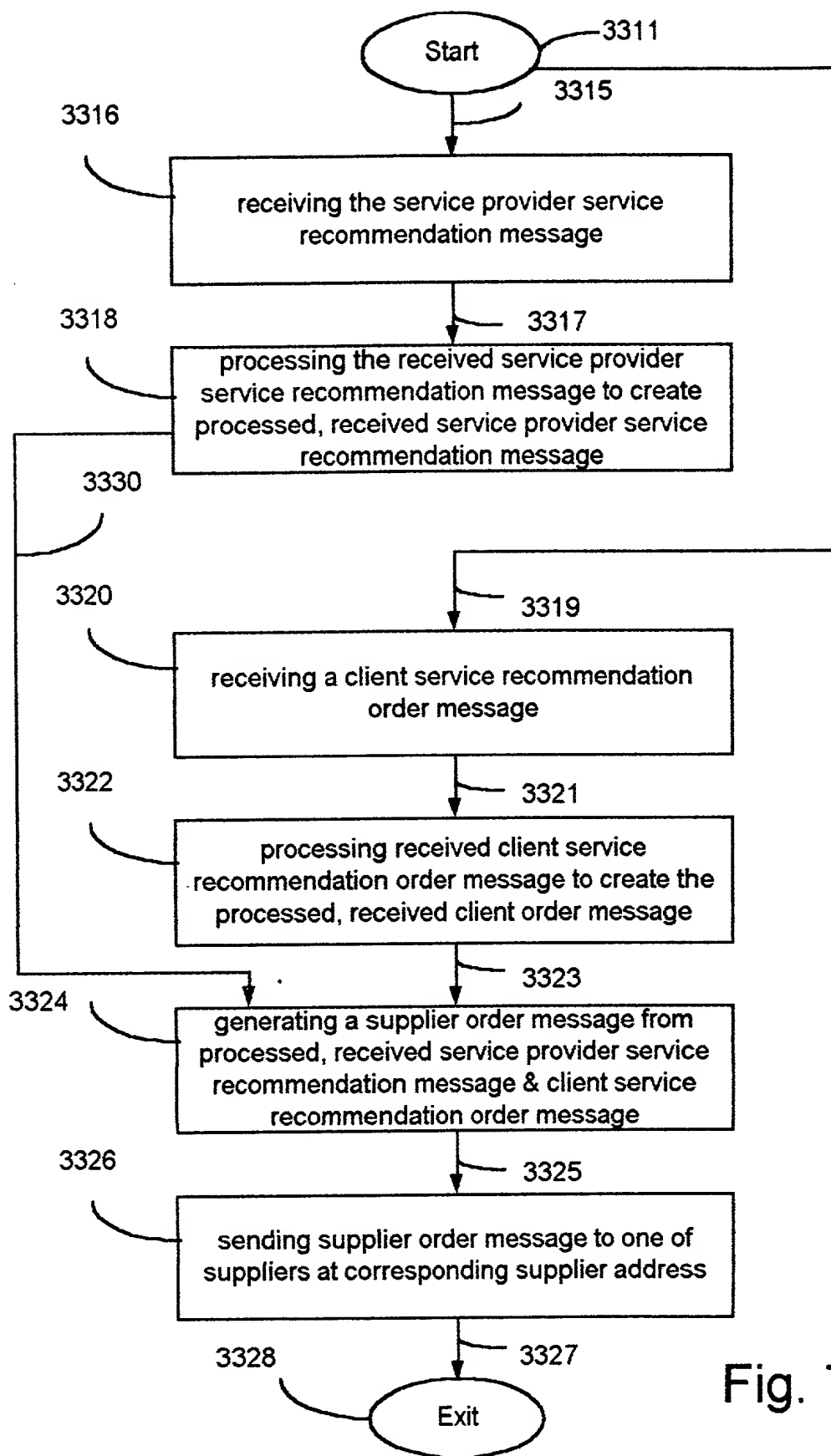


Fig. 78A

HEAL001

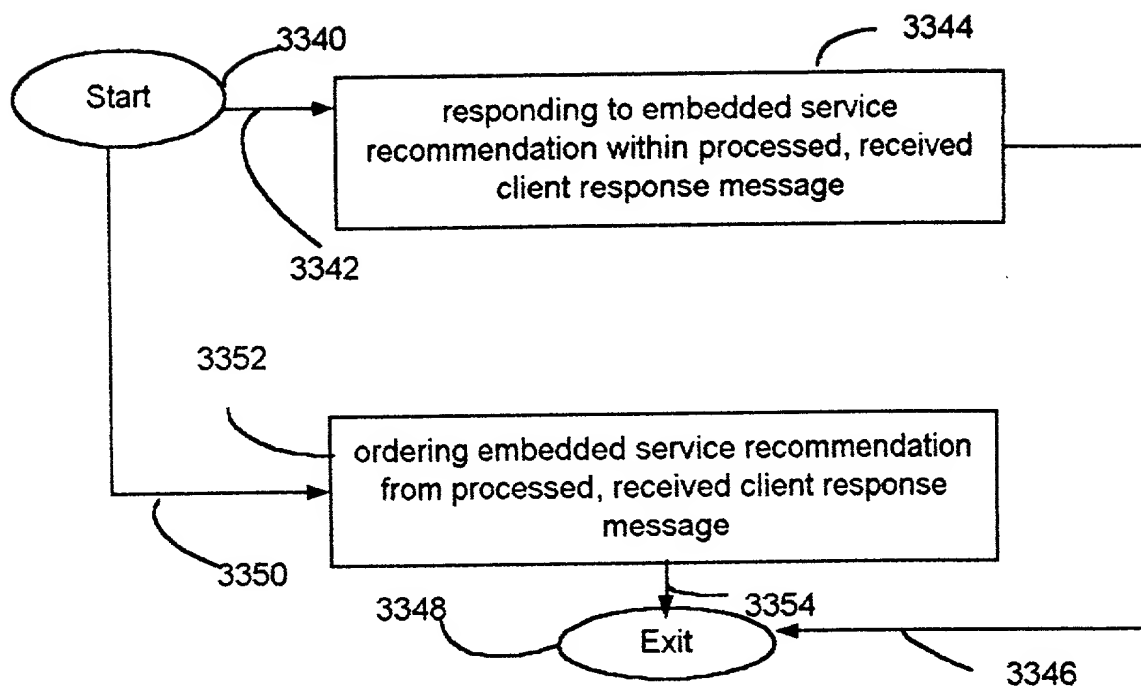


Fig. 79

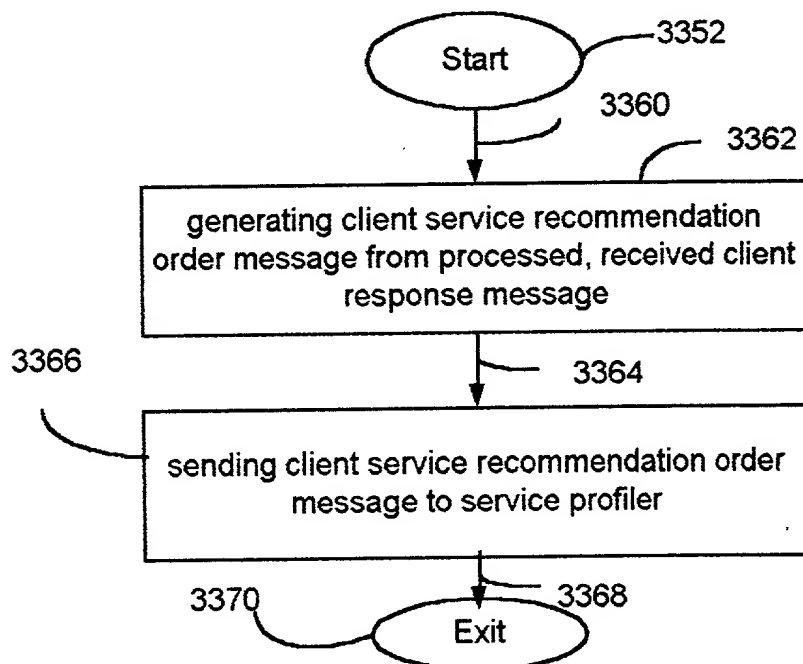
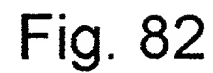
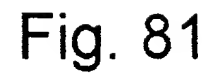


Fig. 80



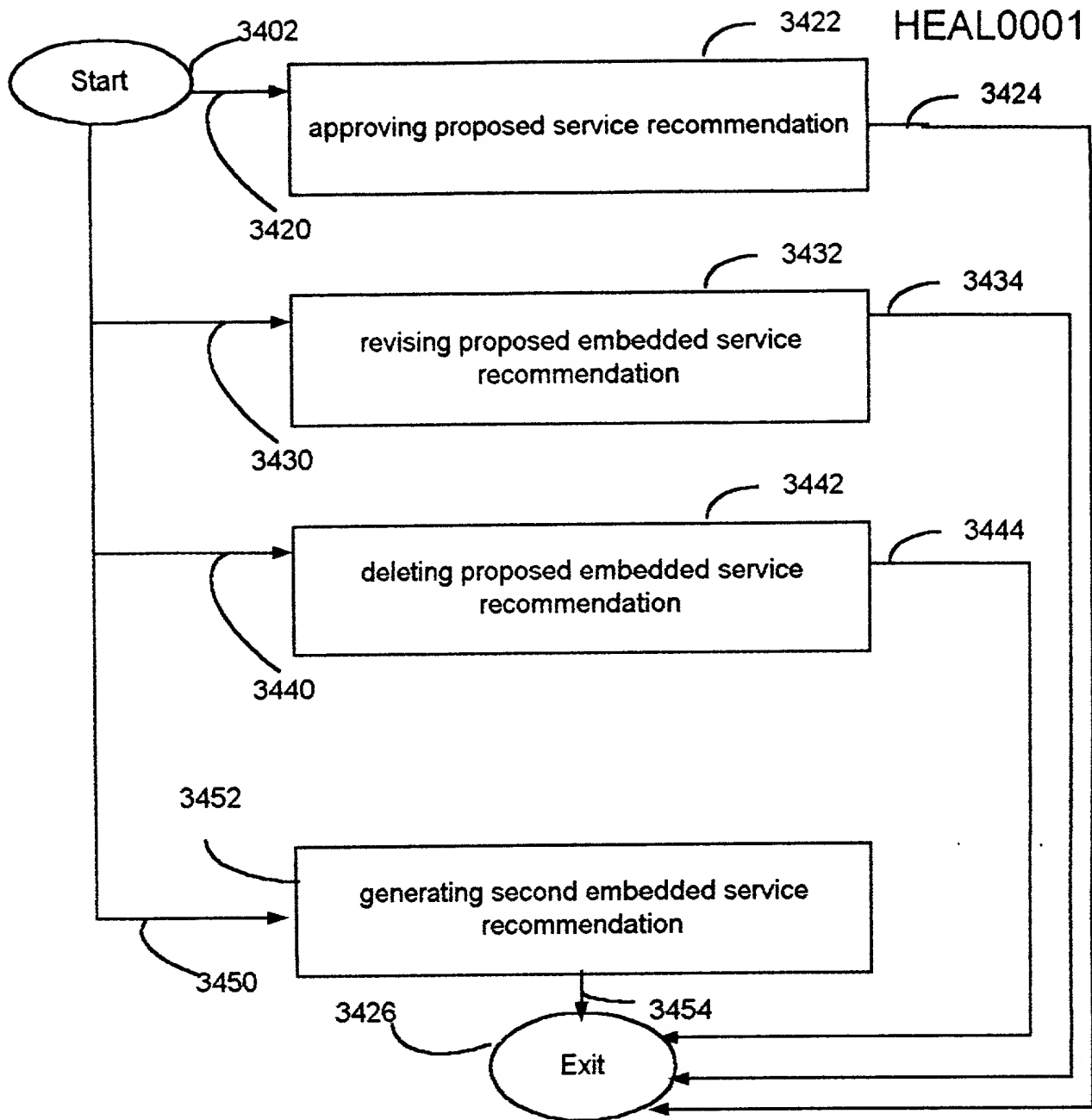


Fig. 83

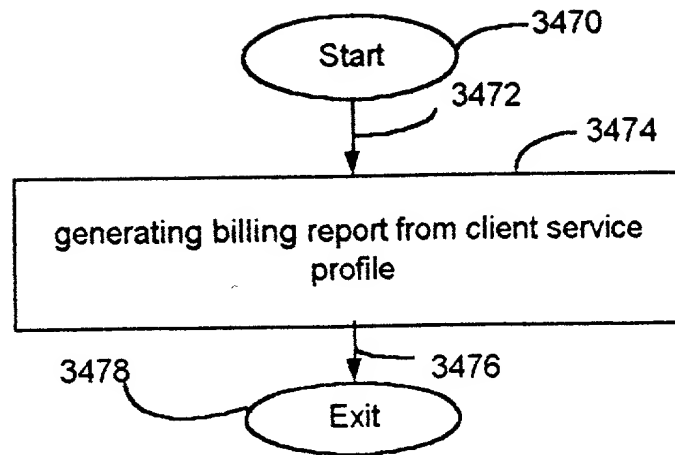


Fig. 84

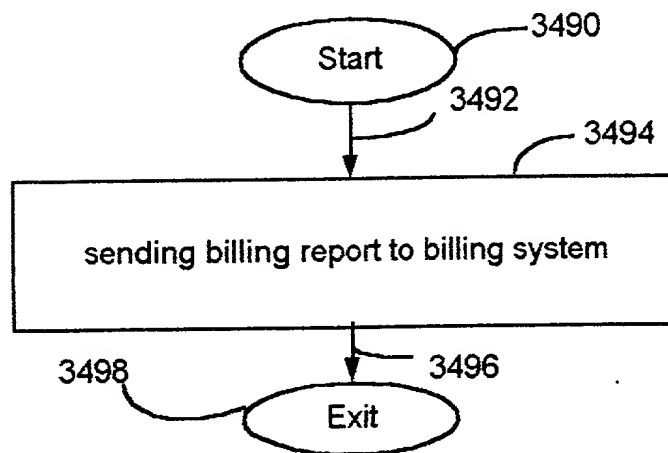


Fig. 85

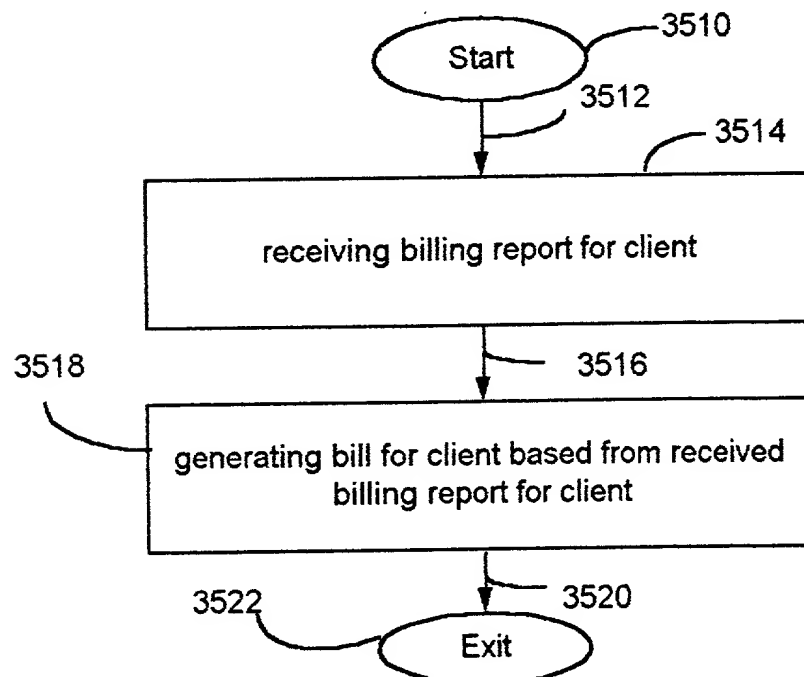


Fig. 86

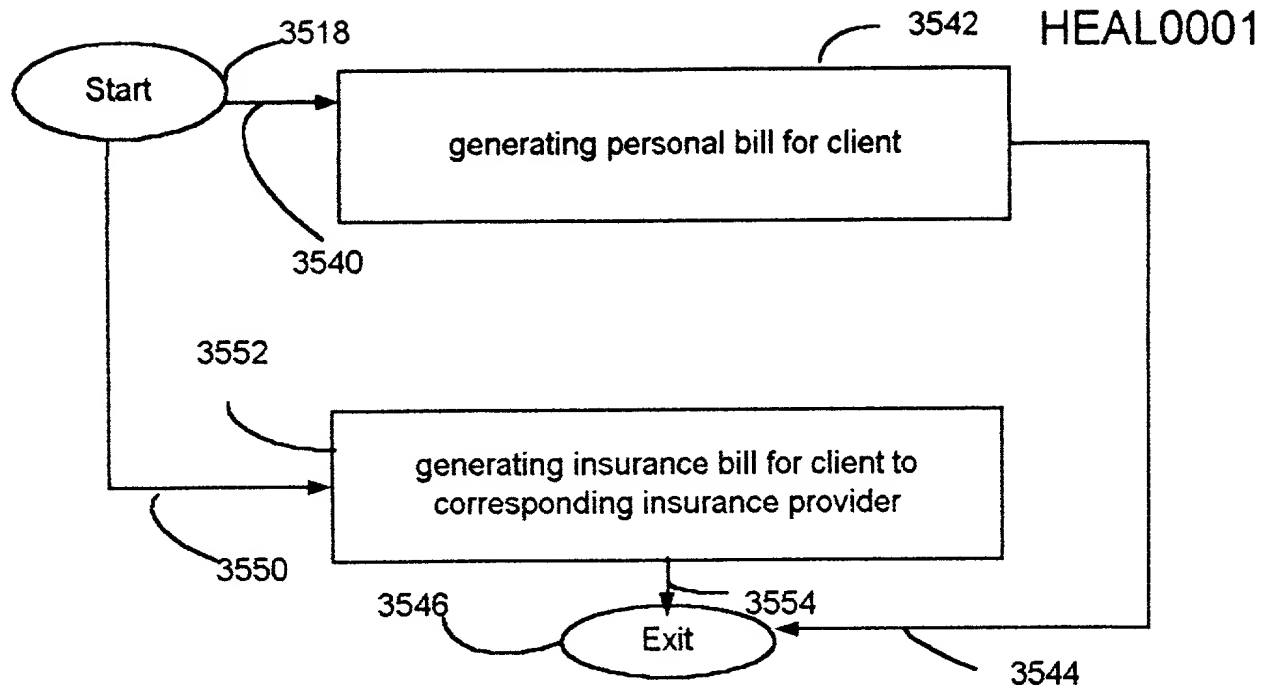


Fig. 87

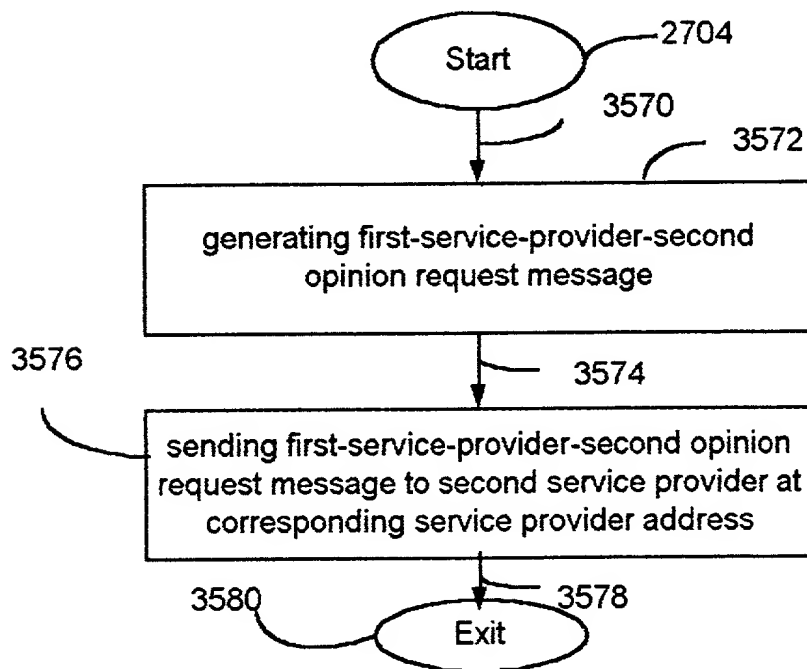


Fig. 88



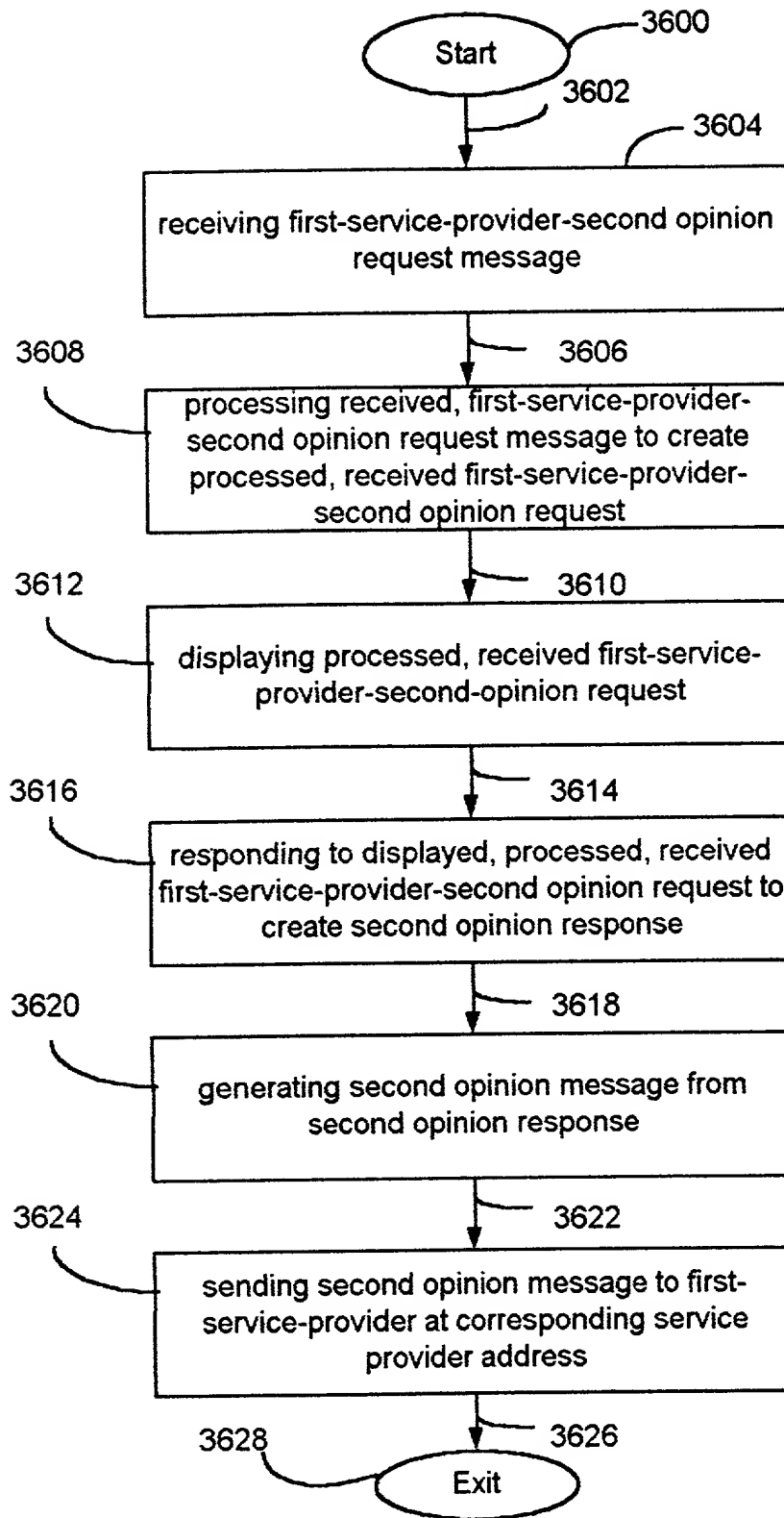


Fig. 89

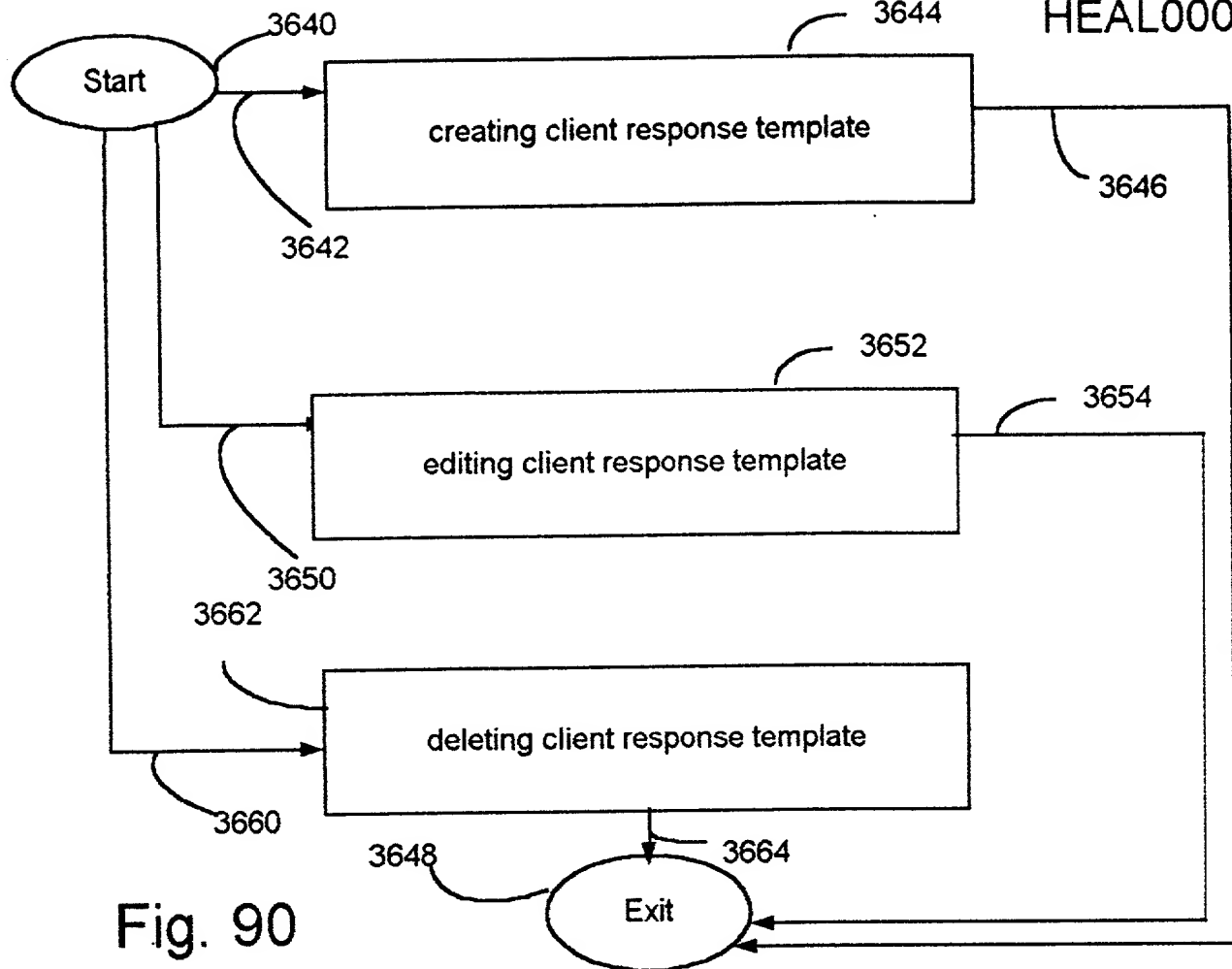


Fig. 90

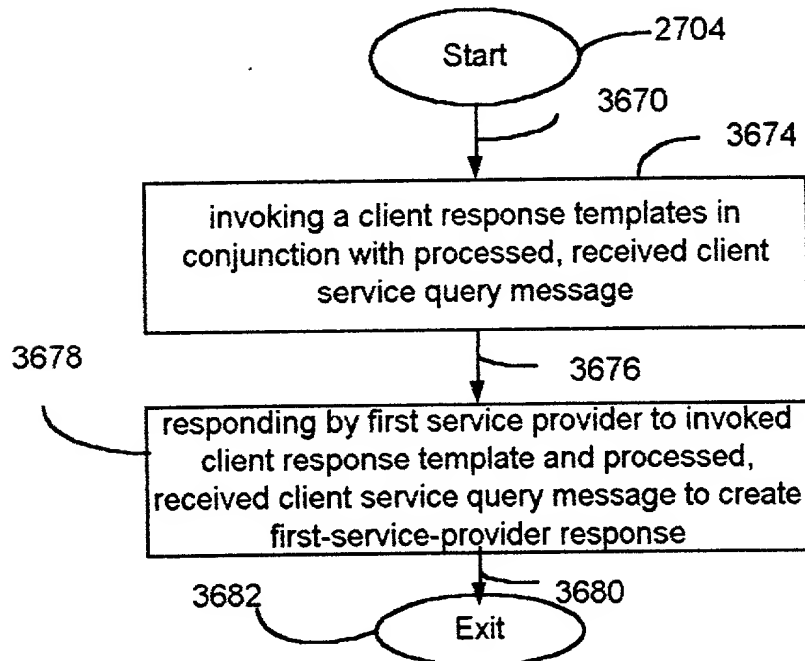


Fig. 91

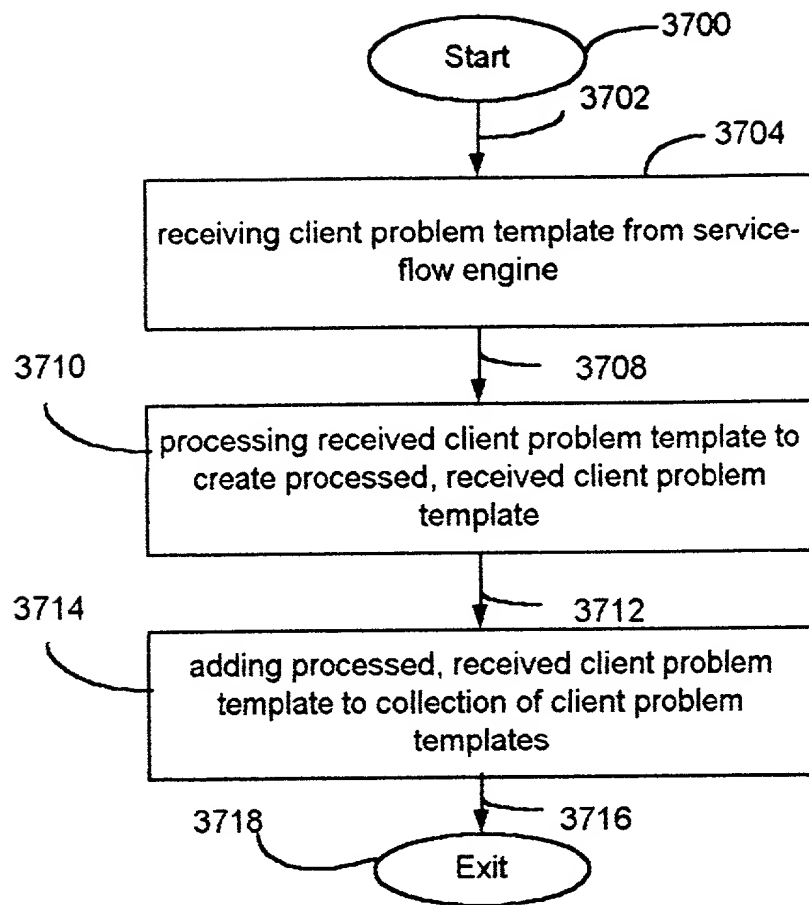


Fig. 92

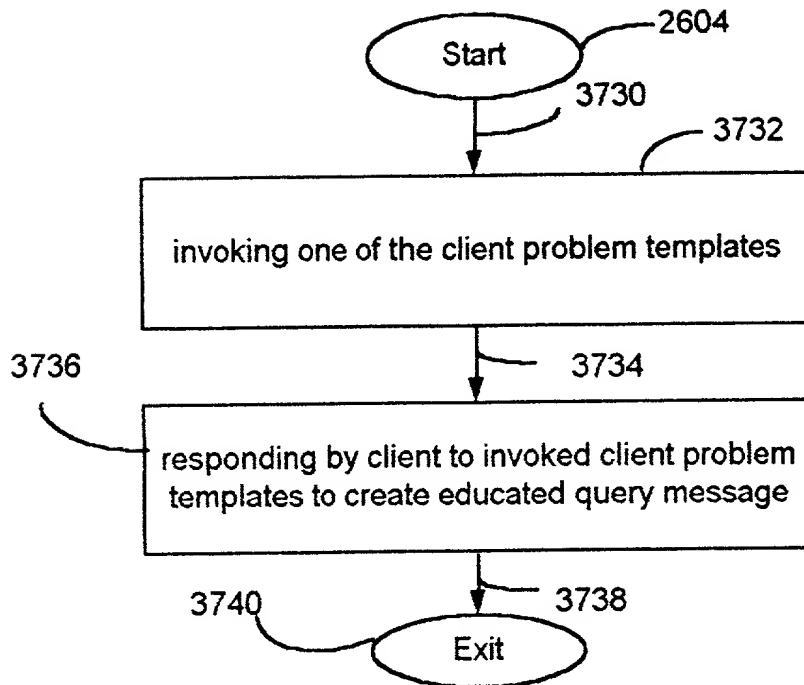


Fig. 93

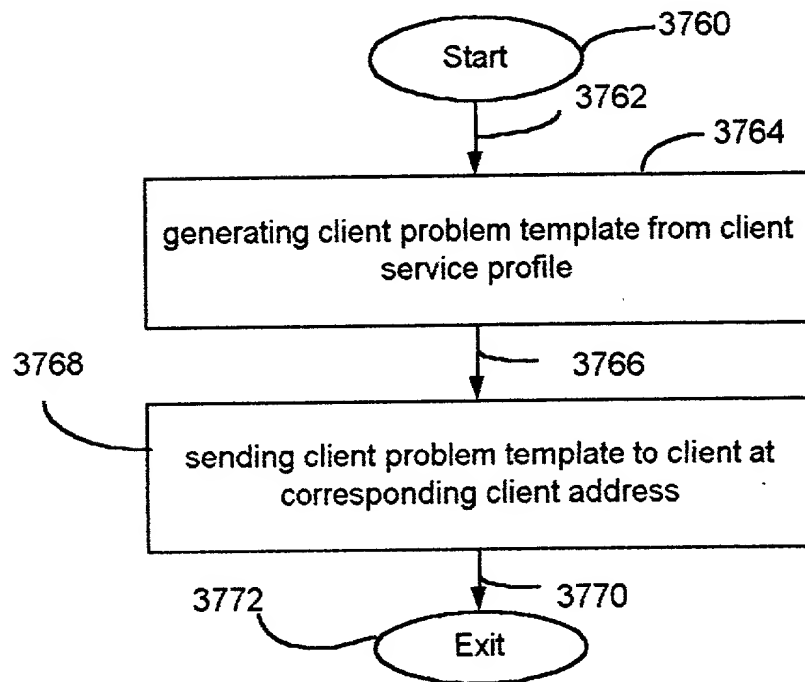


Fig. 94

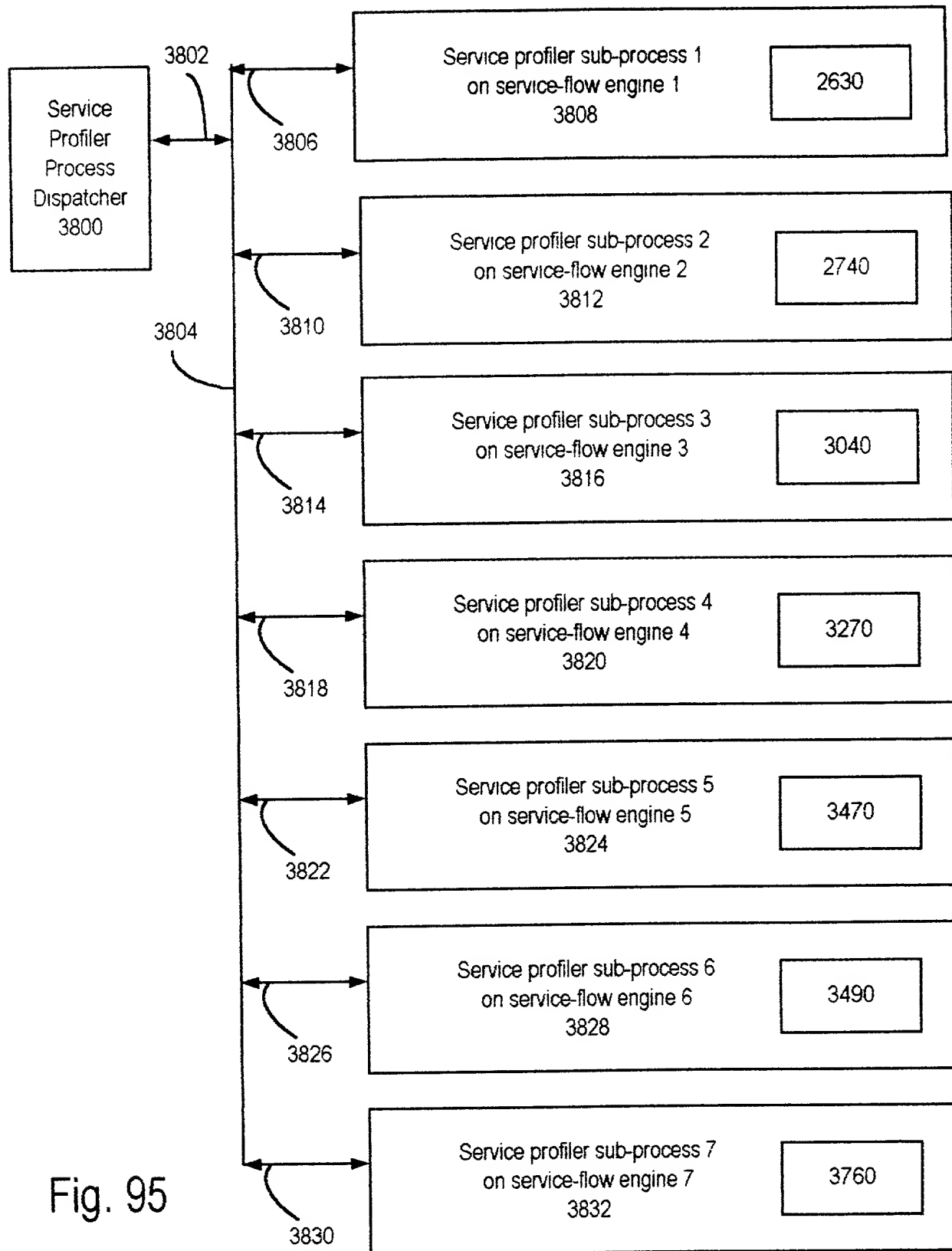


Fig. 95

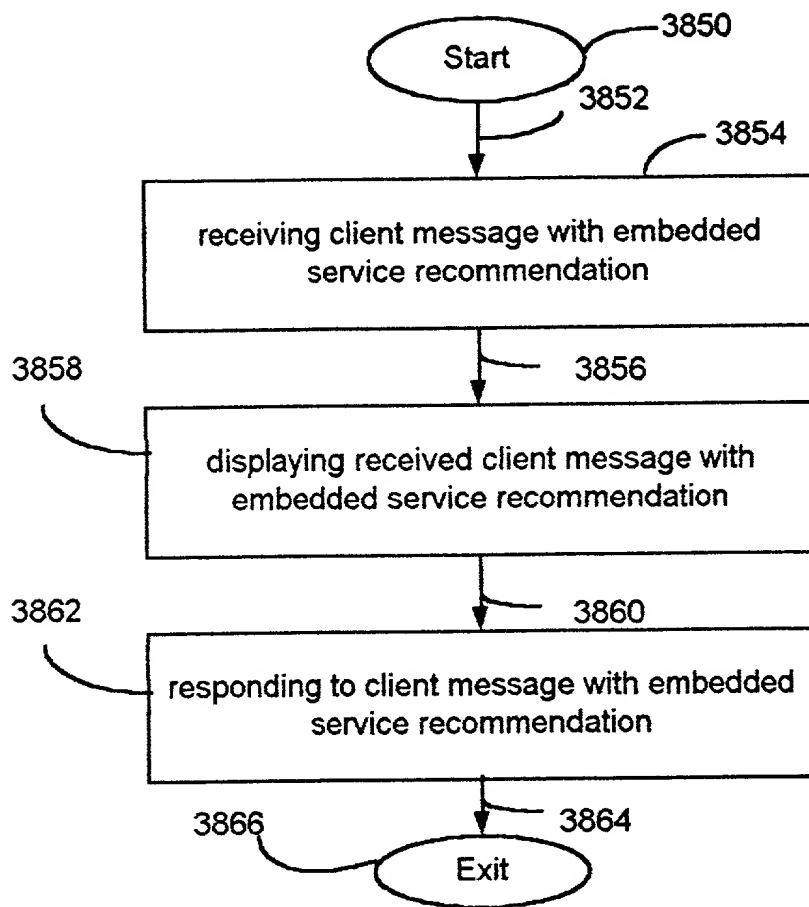


Fig. 96

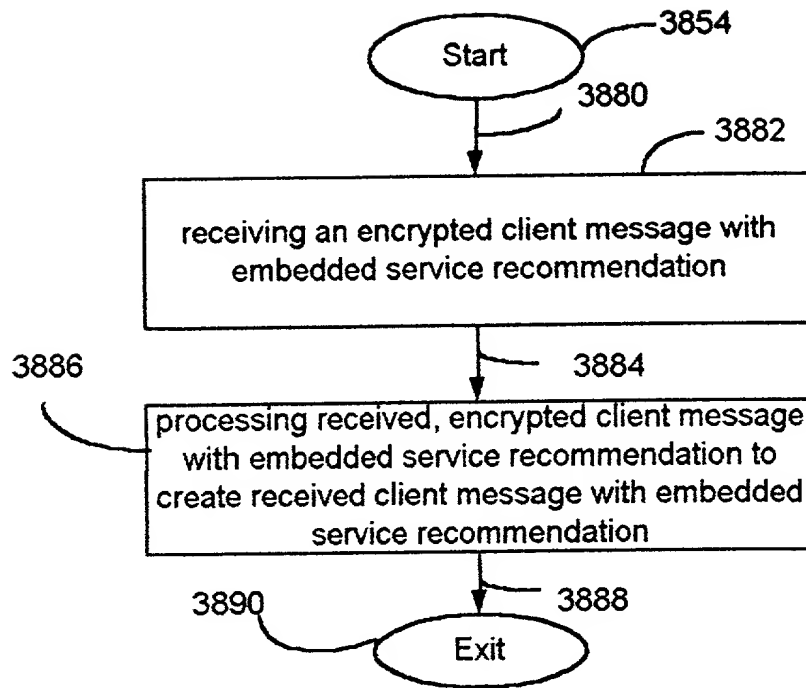


Fig. 97

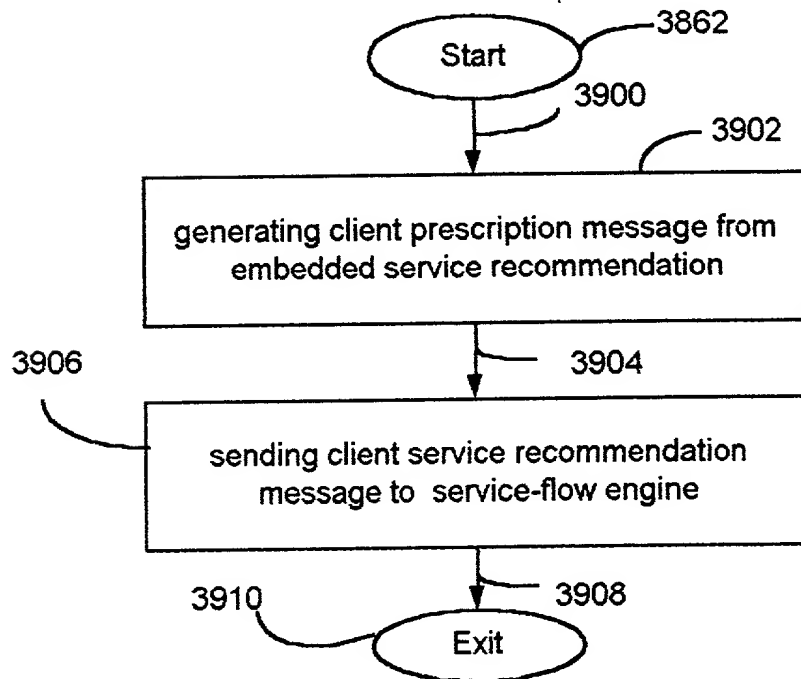


Fig. 98

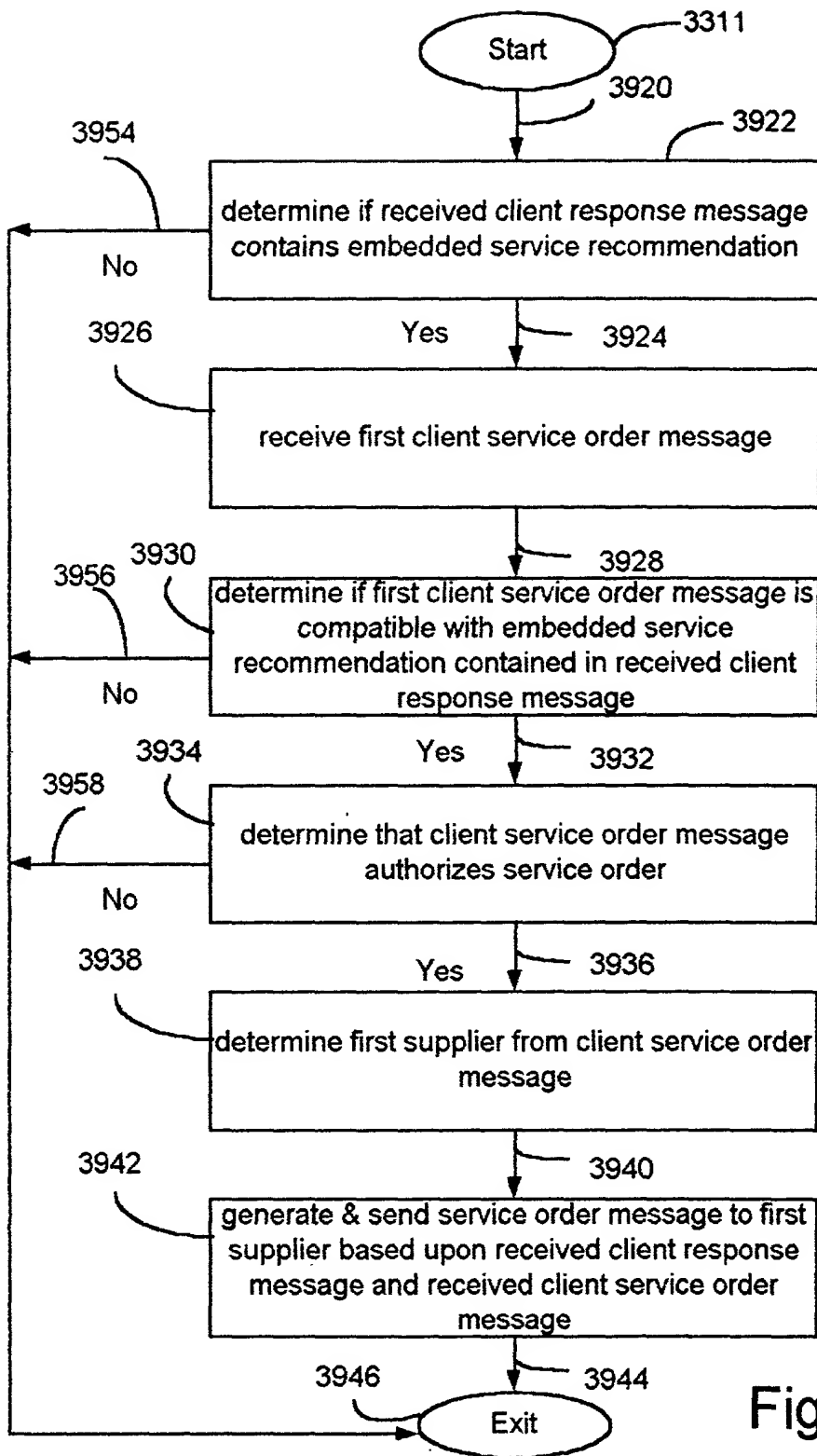


Fig. 98A



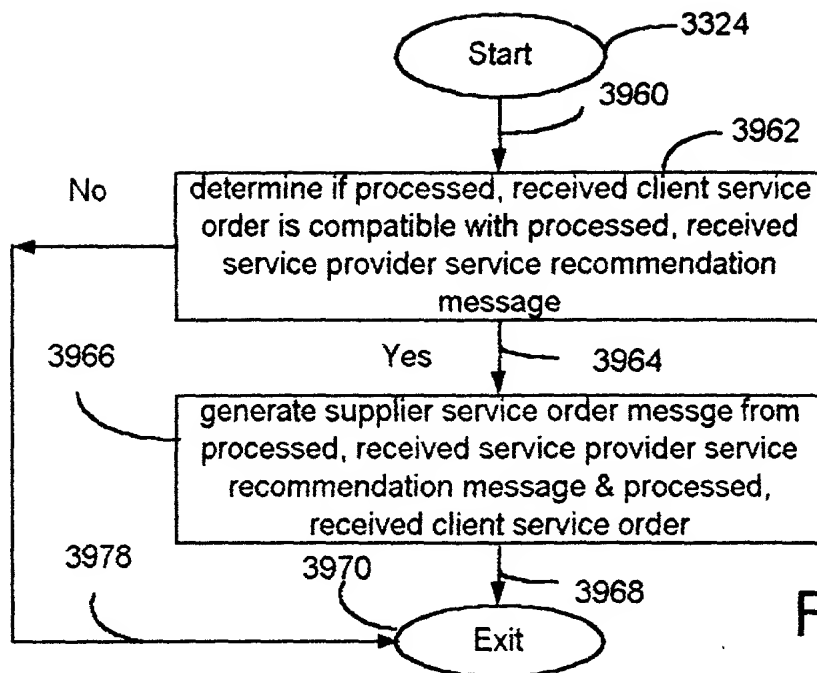


Fig. 98B

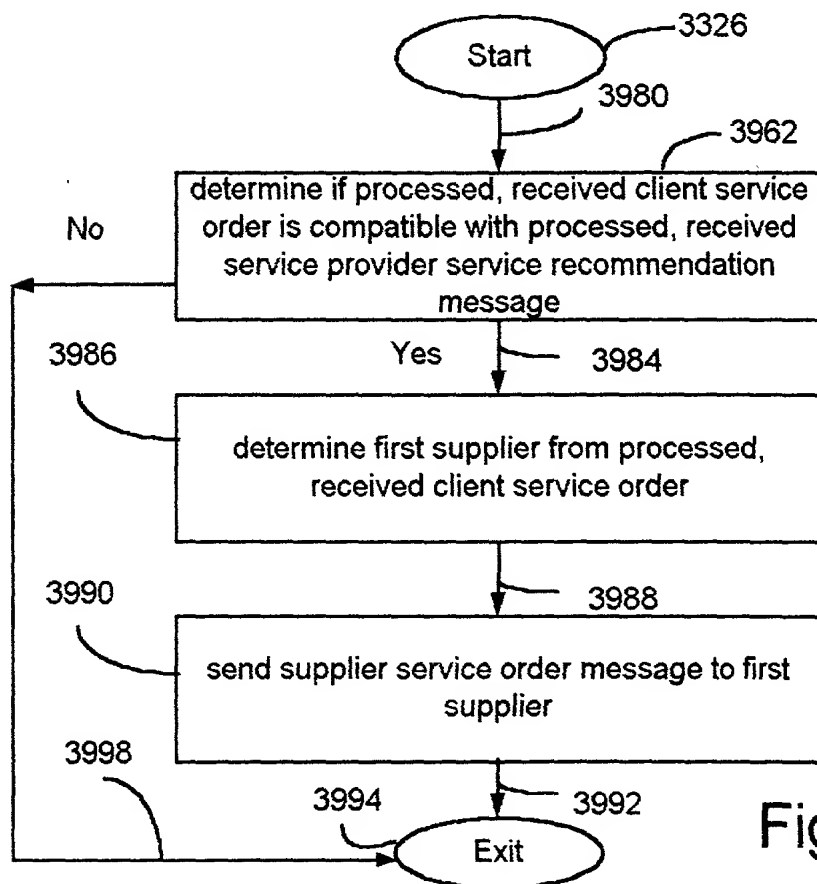


Fig. 98C

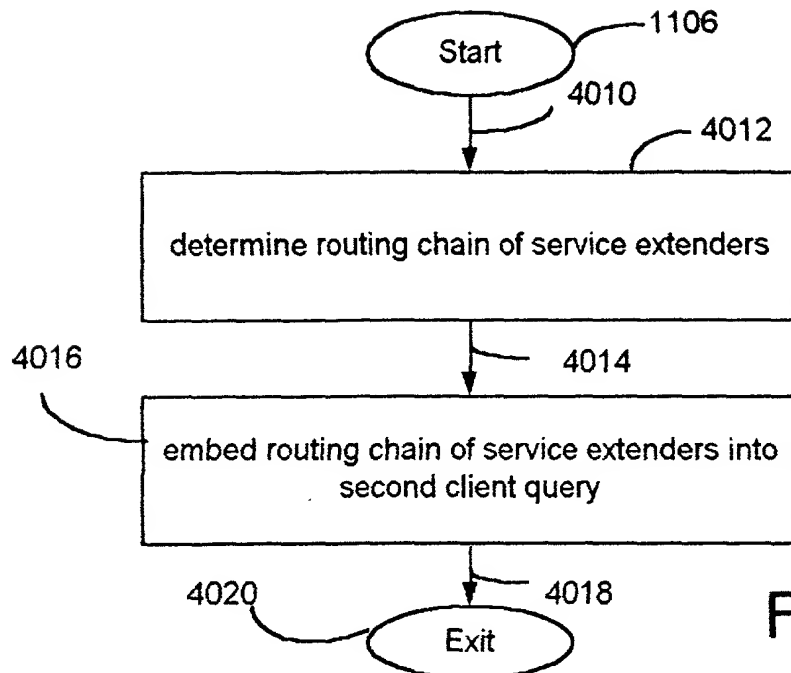


Fig. 98D

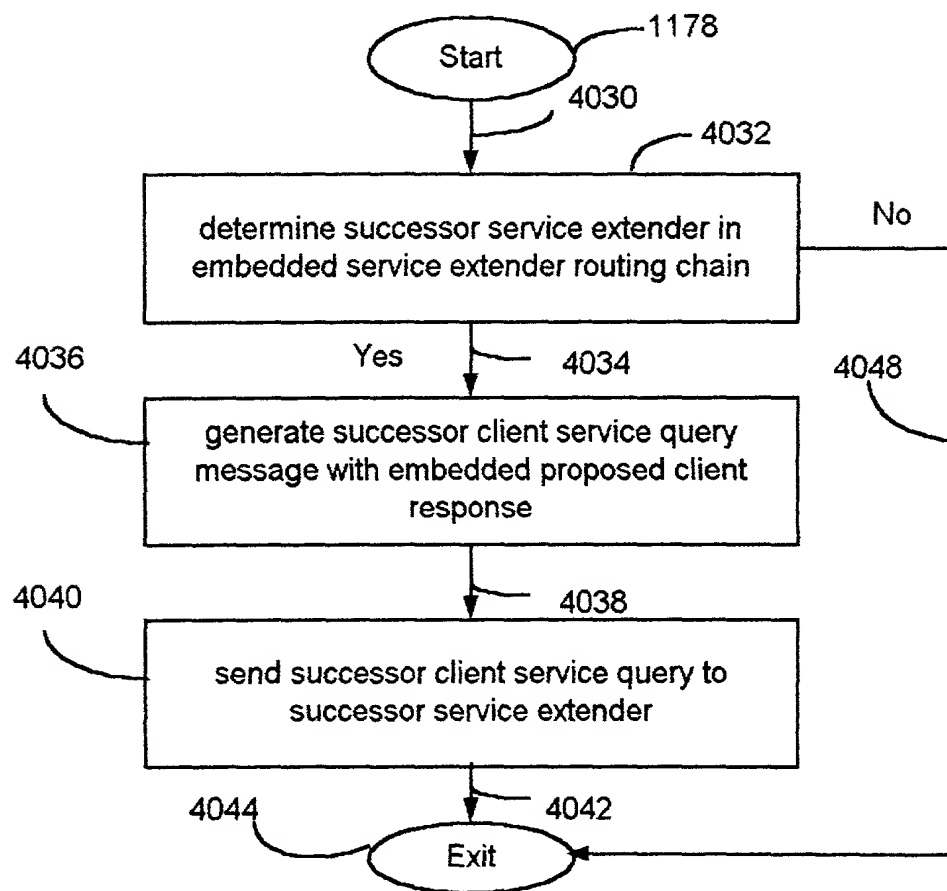


Fig. 98E

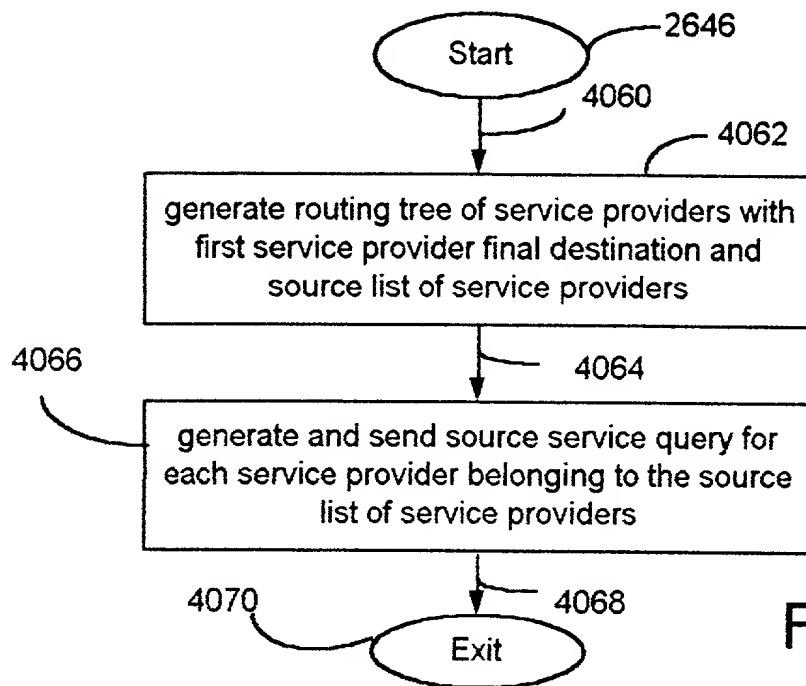


Fig. 98F

**DECLARATION FOR PATENT APPLICATION**

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name;

I believe I am the original, first, and sole inventor (if only one name is listed below) or an original, first, and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**A MESSAGE AND PROGRAM SYSTEM SUPPORTING  
COMMUNICATION**

the specification of which (check one) ☒ is attached hereto, or ☐ was filed on \_\_\_\_\_  
as Application Serial No. \_\_\_\_\_ and was amended on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a).

=====

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

Priority Claimed  
Yes No

Number Country Day/Month/Year Filed

Number Country Day/Month/Year Filed

=====

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

MICHAEL A. GLENN, Reg. No. 30,176  
DONALD M. HENDRICKS, Reg. No. 40,355  
KIRK D. WONG, Reg. No. 43,284

SEND CORRESPONDENCE TO:

MICHAEL A. GLENN, 125 Lake Road, Portola Valley, CA 94028

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Attorney Docket No. HEAL0001

I hereby claim the benefit under Title 35, United States code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Application Ser. No. Filing Date Status: Patented, Pending, Abandoned

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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